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Abstracts of Tuberculosis ***will be published at intervals as an integral part of the*** **American Review of Tuberculosis.** ***It will receive separate paging and may, if desired, be bound separately at the completion of the volume.***

The Abstract Editor is Dr. George Mannheimer, 41 West 51st Street, New York City. Prompt transmission to him of reprints or abstracts of papers on tuberculosis, sanatorium or board of health reports, etc., will promote their early publication in this section.

Abstracts should be sent typewritten on one side of the page only. They should be as concise and compact as the subject matter of the article warrants. They should be headed with a short title, and followed by the full title of the paper, author's name, journal, date, volume and page.

Corrections: See table, p. 97, June, 1920, Review, Abstract Section.—The numbers and rates given for January, 1920, included all forms of tuberculosis instead of only pulmonary. The number and rate respectively for New York State should have read 993 and 105.6; for New York City, 607 and 116.4; for the State exclusive of New York City, 386 and 92.3; urban, 175 and 85.3; rural, 187 and 88.7.

Prophylaxis of Tuberculosis.—Calmette insists on the importance of some of the more recent acquisitions in our knowledge of tuberculosis, such as that the tuberculous with occult or latent lesions may suddenly begin to eliminate tubercle bacilli in their glandular excretions or their dejecta. This intermittent elimination by these occult carriers is very common, but is seldom recognized. He reiterates further that no person and no animal contracts tuberculosis, no matter how unhygienic the environment, unless virulent tubercle bacilli have been brought into this environment by some human or animal continuous or intermittent spreader of these bacteria. All our efforts therefore should be predominantly directed to ward off this importation of the bacilli, especially frequent importations and on an extensive scale. Every one who reacts to the tuberculin test—even though apparently entirely healthy—is an intermittent spreader of germs, the more dangerous because unsuspected. They are the ones who disseminate contagion even in the remotest region of the world. It will always be difficult to discover these intermittent sowers of bacilli, either human or bovine. But every person or animal reacting positively to the tuberculin test should be regarded with suspicion, and young children and young domestic animals in localities still free from infection should be guarded against them, and against contamination of milk and food, by hands, towels, flies, street and other dust. The reservoirs of virus in open tuberculous cases in man and animals are the source of the massive and frequent contaminations which entail phthisis even in adults. To guard their environment against them requires insight and science on the part of physicians and veterinarians, and training in hygiene for all interested, either because they have to live with the sick or fear loss of their herd.—*Les acquisitions récentes de la medicine expérimentale dont il faudra tenir compte desormais dans nos efforts de lutte antituberculeuse, A. Calmette, Presse Med., December 17, 1919, xxvii, No. 77, 773.*

Pulmonary and Other Forms of Tuberculosis.—A distinction is made between pulmonary tuberculosis and consumption. The former is caused by the tubercle bacil-

lus, and its most characteristic lesion is the tubercle surrounded by fibrous tissue with resulting caseation; consumption involves an actual destruction of the lung tissue with the formation of pus and is caused by other pathogenic organisms in a tuberculous lung. The primary infection with the tubercle bacillus usually occurs in childhood, and the development of pulmonary tuberculosis in later years is due, as a rule, to reinfection from within, when for some reason or other the individual's power of resistance are lowered. But the mixed infections, which added to the tuberculous infection are responsible for consumption, come from without and any conditions favoring the spread of bronchial catarrh will increase the amount of consumption. This possibly explains in part the failure of sanatorium treatment in the English climate to cure many cases of tuberculosis. Village settlements in a warm dry climate would probably be preferable because less favorable to the spread of catarrhal infections. Two other possibilities for the future are the use of tuberculin in childhood to increase resistance to subsequent tuberculous infection, and the use of catarrhal vaccines when patients show symptoms of pulmonary tuberculosis, to prevent the development of consumption. The value of these must first be proved.—*Pulmonary Tuberculosis and Other Forms of Tuberculosis, H. B. Shaw, Lancet, January 24, 1920, 179.*

Latent Tuberculosis. — Investigators have proved that the tubercle bacillus may penetrate the tissues without leaving any trace at the point of entrance and may scatter to various parts of the body and there multiply. During this process and before recognizable tuberculous lesions develop in the body, tuberculo-toxins are being manufactured. The term latent tuberculosis is best applied to this period between infection and the development of lesions sufficient to enable us to recognize tuberculous disease. If the presence of the tubercle bacillus is to be discovered during this period, our search must be directed to the more subtle effects of the poisoning of the body by the toxins of the bacilli. The function of every organ of the body may be disturbed at times. Particularly in growing children and adolescents, failure to gain in weight, poor chest development, enlarged cervical glands, disturbance of endocrine balance and lowered blood pressure are suggestive of tuberculous toxemia. Tuberculin is the best method of testing the presence of a tuberculous infection. When by this means it is determined who are and who are not infected, latent tuberculosis will take on a new meaning, and further examination will reveal that many so called latent cases are actually active cases, or may easily develop active symptoms.—*Latent Tuberculosis, O. W. McMichael, Med. Rec., February 21, 1920, xcvii, 317.*

Classification of Pulmonary Tuberculosis.—Fraenkel modifies Albrecht's classification, so as to divide pulmonary tuberculosis into the following types: (1) acute miliary; (2) caseous pneumonia; (3) subacute disseminated small nodular; (4) nodular-cirrhotic (the chronic confluent nodular disease); *a*, hilum-apical process; *b*, chronic-advancing type; *c*, chronic-stationary type; (5) cirrhotic; (6) basal.—*Beitrag zur Frage der Klassifizierung der Lungentuberkulose, E. Fränkel, Zeitschr. f. Tuberk., December, 1919, xxxi, 266.*

Needs of the Tuberculosis Campaign. —The two chief needs of a successful campaign against tuberculosis are surveys to determine the real extent of the disease in each community, and the adoption of definite standards in diagnosis and treatment. In the education of the public on the subject of tuberculosis, the most useful agencies are the public press, moving pictures, and teaching in the public schools in connection with courses on physiology and hygiene. After-care work in the sanatorium must be developed so that the patient is under supervision for months after his discharge. A public consultation service for physicians to aid them in dealing with tuberculous cases is also necessary; this, too, can be organized by the sanatorium. Tuberculosis dispensaries should be easily accessible. More attention should be given to the treatment of nonpulmonary tuberculosis. The spread of the gospel of right living, the correction of evil industrial housing and living conditions, and not efforts directed solely to the tubercle bacillus or the tuberculous individual are most effective in ridding the world of tuberculosis.—*The Present Needs of the Tuberculosis Campaign, J. B. Hawes, 2nd, Boston M. & S. J., February 12, 1920, clxxxii, 161.*

The War and Tuberculosis.—The war has not added one iota to our positive knowledge of tuberculosis. It has perhaps convinced the public that there is more active tuberculosis than has been supposed, and it has made clearer the lack of proper equipment and methods for fighting the disease. Primarily the war has taught us the need of further research on tuberculosis. It has shown us also that large medical military organizations are not the best means of advancing our knowledge of the disease; but that

we must depend on enthusiastic workers in the hospital wards and laboratories and in the sanatoria and dispensaries, and on observant physicians in private practice.—*What the War has Taught Us of Tuberculosis, S. J. Maher, Med. Rec., January 10, 1920, xcvii, 60.*

Better Provision Urged for Tuberculous Discharged Soldiers.—As a part of its efforts to make better provision for the tuberculous among discharged sodiers, and at the same time to bring about an improvement in the campaign the United States Public Health Service is conducting against tuberculosis, Surgeon-General Hugh H. Cummins sent the following telegram to the American Medical Association during its recent sessions in New Orleans: "I desire to urge more active participation by the general practitioner and by general hospitals in the treatment of tuberculosis. To insure earlier diagnoses, properly train internes and other personnel, popularize treatment in the home climate, provide additional facilities. I earnestly indorse the resolution passed by the National Tuberculosis Association in 1916, recommending that general hospitals should admit tuberculous patients and provide separate wards for that purpose. Sanatoriums and specialists in tuberculosis will always be needed and we should have more of them, but I believe that success in the antituberculosis campaign is largely dependent upon first, convenient facilities for observation and prompt treatment of patients with open tuberculosis and second, in a sharpened perception and higher degree of skill by which the family doctor will make early diagnoses or even forestall the development of clinical tuberculosis in the adult before a definite diagnosis is possible. To provide adequate care for tuberculous ex-service men and others, to protect infants from infection, enlist the aid of the general practitioner, allay phthisiophobia, and improve home treatment of tuberculosis, the opening of general hospitals to this most common of all serious diseases will materially assist."

A Tuberculous Cow.—The carcass of a cow inspected at the slaughter house showed no emaciation, and the meat appeared fairly good. The heart, kidneys, neck, throat, head and brain showed no signs of disease, but all other internal organs were affected with tuberculosis. The lungs showed large nodules; the serosa of the stomach, the spleen and diaphragm were affected. The cow had evidently been milked up to within a couple of months before slaughter and must have furnished a considerable quantity of badly infected milk. This shows the need of better veterinary inspection.—*Note on a Tuberculous Cow, J. E. Scales, Brit. M. J., March 20, 1920, 400.*

Can the Tuberculosis Transmission Rate be Reduced?—The plan of the work done was: (1) to determine the presence or absence of tubercle bacilli on eating utensils after they were used by tuberculous patients; (2) to determine the presence or absence of these organisms on eating utensils after these utensils were washed by the usual hand method in hot water; (3) to determine their presence on the hands of patients, and (4) to determine their presence in the air of tuberculosis wards.

Spoon wash water, spoon rinse water, hand scrapings and air washings were investigated. Since tuberculous sputum passes through the oral cavity on its way from the lungs of the tuberculous to the exterior, this cavity becomes contaminated. Objects that enter the mouths of these patients become contaminated with the specific organism. As eating utensils are the most frequent inanimate objects which come in contact with the mouth, it is to be expected that guinea-pigs injected with the wash water from eating utensils of the tuberculous patient would die from tuberculosis. Thirty-five per cent of animals so injected died from the infection.

But the outstanding feature of this series of experiments is that the percentage of deaths, 25, from the rinse water injections was almost as great as that from the wash water injections. It is believed that the hand washing of the spoons in this series of experiments can be taken as representative of the usual method of washing eating utensils. If this is so, the difference in the percentage of deaths between the animals injected with washings and rinsings indicates that only about 30 per cent of the spoons used by tuberculous patients are rendered free from the organism by the usual hand method of washing.

This group of rinse water injections, with its 25 per cent mortality, demonstrates the facility of tuberculosis transmission and indicates that in families the eating utensils are the *major* avenue of distribution.

The primary infection, then, is not the result of airborne transmission, nor is it in the lung as is generally maintained; but it is salivaborne and in lymphoid tissue. The primary focus might be either in the tonsil or in a mesenteric lymph node. From these primary foci, tubercle bacilli are subsequently passed into the lymph channels and thence to the blood stream. Since the first network of small vessels through which the blood passes is in the lung, the organisms are filtered out,

just as in hookworm infection, and here their multiplication produces a secondary focus. In the lung, the evidence indicates that extension again takes place through lymph channels, resulting in multiple foci. From an epidemiologic standpoint the breaking down of these multiple foci, the liberation of tubercle bacilli, the contamination of saliva, the soiling of eating utensils by saliva, and the use of these without being rendered aseptic by boiling water, result in the introduction of repeated small doses, one or more of which are finally carried through the barrier and involve lymphoid tissue of the newly infected person; thus there is completed the cycle of transmission. It is not the large dose of tubercle bacilli that is usually responsible for infection, but it is the repeated small doses. The author emphasizes that his findings in no way influence the teaching that promiscuous spitting and careless coughing should be heartily discouraged, not only from the standpoint of common decency, but also from that of disease prevention. Just as a 99 per cent removal of organisms from a polluted water supply controlled the intestine-borne infections, so, likewise, will a similar reduction of organisms on eating utensils control the saliva-borne infections. The universal application of the principle of eating utensil asepsis will accomplish more in the control of tuberculosis than will any other single measure of practical application. In the control of tuberculosis, the adoption of the principle of using boiling water as a cleansing and a pasteurizing agent of eating utensils applies especially to the small messing group—the family—and also, but to a less extent, to the public eating place.—*Can the Tuberculosis Transmission Rate be Reduced? J. G. Cumming, J. Am. M. Ass., April 17, 1920, lxxiv, 1072.*

Experimental Pneumectomy.—During the past six years, the authors have removed one lung from each of 23 dogs. Intratracheal anaesthesia with positive pressure was always used in the operation. The lung was removed through an intercostal incision on the left side after ligating the pulmonary arteries and veins, stripping the main bronchus and its branches of all lung tissue, and dividing the naked bronchi. The bronchial stump was then carefully closed. Of the 23 dogs, 10 died, 6 of the deaths being due to an epidemic of distemper. Fluoroscopic examinations of the surviving animals showed that neither immediately after the operation nor in the course of weeks or months did any fluid accumulate in the pleural cavity. Within a few days after the operation the heart moved over toward the empty pleural cavity, and within six or eight weeks the pleural cavity was completely or almost completely filled, chiefly by the dislocation of the heart and remaining lung toward the side operated on, but partially by the flattening of the thoracic wall with attendant scoliosis and the elevation of the diaphragm. The remaining lung increases in size. A number of the dogs were under observation for a year, and when placed with other dogs were, with one exception, as active and healthy as the normal animals.—*Experimental Pneumectomy, G. J. Heuer and G. R. Dunn, Bull. Johns Hopkins Hosp., February, 1920, xxxi, 31.*

Bacterial Invasion of Respiratory Tract.—From studies of pulmonary irritating gases and of influenza pneumonia and from experiments on rabbits, the following conclusions were drawn: The submucosa of the trachea contains a rich plexus of lymphatics, prominent everywhere and devoid of valves. At the bifurcation of the trachea anastomosis occurs with similar plexuses in the bronchi, and this phenomenon is repeated throughout the region of the cartilage-bearing bronchi. At the bifurcation of the trachea, as well as of the bronchi, there is drainage to the lymph glands and anastomosis with periarterial and peribronchial lymphatics. When the lymphatics are injected, the larger portion of the material is diverted at these bifurcations, but continuity of the lymphatic system in the tracheal and bronchial submucosae is demonstrable. Pneumococci introduced by needle puncture through the skin into the lumen of the trachea or by insufflation, provided the insufflating catheter damages the epithelium of the trachea, spread by way of the lymphatics to the lung. The lymphatics of the submucosa of the trachea, then, afford a direct pathway of infection to the lung. Although this lymphatic system provides a pathway for infection, it may also serve as a protective mechanism against pulmonary infection, for the drainage of the submocosa of the trachea and bronchi is largely diverted as the lung is approached to the protecting regional lymph glands.—*An Unrecognized Pathway for Bacterial Invasion of the Respiratory Tract (Illustrated), M. C. Winternitz, G. H. Smith and E. S. Robinson, Bull. Johns Hopkins Hosp., March, 1920, xxxi, 63.*

Diagnosis of Early Pulmonary Tuberculosis.—In the diagnosis of pulmonary tuberculosis it is important to distinguish between arrested and early active cases. A full family history and a careful individual history are important aids. Of the subjective symptoms, gradual loss of flesh, increasing lassitude and inaptitude for work,

slight afternoon and evening pyrexia and digestive disturbances are most suggestive. Of the objective signs on physical examination, the most important are slight impairment of percussion resonance in conjunction with enfeeblement of breath sounds and localized areas of crepitations. All parts of the lung must be examined, not merely the apices. A positive sputum report is of great value, but a negative one is of no value. X-ray examination assists very materially especially in hilum tuberculosis. Lastly the tuberculin test should be made, preferably the hypodermic test with Koch's O. T.—*Points in the Early Diagnosis of Pulmonary Tuberculosis, T. Beattie, Brit. M. J., January 24, 1920, 111.*

Inorganic Salts Necessary for the Growth of the Tubercle Bacillus. Lockemann repeats and is unable to confirm the results of Loewenstein (Biochem. Zeitschr. 1911, xxxi, 142) who grew the tubercle bacillus on a medium containing $(NH_4)_2HPO_4$, 0.6 per cent, glycerol 4 per cent, and KCl, K_2SO_4, or NaCl 0.4 per cent, and stated that Mg, K, Na, S, and Cl were not essential for growth. Lockemann believes that Loewenstein did not use preparations pure enough to assure him of the exclusion of other inorganic salts, and emphasizes the necessity of using not only chemicals of the highest purity but also a nonsoluble glass container for the cultures. In his own experiments he was unable to secure growth of human tubercle bacilli without K and Mg. In a number of trials in which a variety of media were used, containing Na, K, Ca, Mg, NH_4, HPO_4, and HSO_4, as well as glycerol, citric acid, and asparagin as sources of C and N, he obtained excellent growth when K, HPO_4, and Mg were present, but not in their absence. These inorganic ions are then essential in the growth of the tubercle bacillus, while Na, Cl, Ca, and S may be dispensed with.—*Welche Nährstoffe sind für das Wachstum der Tuberkelbazillen unbedingt notwendig? Georg Lockemann, Centralbl. f. Bakteriol., Sept. 27, 1919, lxxxiii, 420.*

Technic for Staining Sputum for Tubercle Bacilli.—The method of staining sputum for tubercle bacilli recommended by the author takes less time than the ordinary method and raises the percentage of positive results by at least 25 per cent. A thick portion of the sputum or several mucopurulent pellets are selected and transferred to the slide; one drop of NaOH is added and the sputum emulsified with the aid of heat into a transparent gelatinous mass, which is spread evenly. The slide is dried in the incubator, then immersed in carbol-fuchsin, warmed to incubator temperature and allowed to remain in the incubator fifteen minutes. It is then washed in equal parts of Esbach solution and water, decolorized with 25 per cent nitric acid until faintly pink, washed in water and alcohol, and counterstained with malachite green (1 part of saturated alcoholic solution in 19 parts of water) for thirty seconds to one minute. Malachite green gives a soft groundwork in strong contrast to the bacilli and materially lessens the labor of search.—*An Improved Technique for the Staining of Sputum for Tubercle Bacilli, H. Distaso, Lancet, January 3, 1920, 19.*

Direct Cultivation of Tubercle Bacilli from the Tissues.—In the direct cultivation of tubercle bacilli from the tissues, the disintegration of tissue and the destruction of contaminating bacilli by antiformin is facilitated by a preliminary trituration of the tissue with quartz sand, continued until the material forms a slightly moist, crumbling mass. After a brief exposure to the antiformin, the material is shaken up with sterile saline solution and centrifugalized three times, and the resulting sediment is used for making cultures. This procedure appears to have no deleterious effects on the bodies of the tubercle bacilli or their vitality. The medium used is the Dorset egg medium modified by the addition of horse heart digested with trypsin for three weeks. The eggs used for the preparation of the media should be as nearly as possible new laid. Growth on this medium is rapid, cultures being visible as a rule in less than a week and copious in less than three weeks. The addition of glycerin to this medium inhibits the growth of bovine strains, and other cultural characteristics of bovine and human strains are well defined.—*On the Direct Cultivation of Tubercle Bacilli from Tissue, G. H. Wilson, Brit. M. J., January 31, 1920, 146.*

Tuberculous Psychoneurosis.—Psychoneurosis in the tuberculous is divided into three distinct groups, the hereditary and that accompanying latent and abortive types of pulmonary tuberculosis, the chronic phthisical group, and the acute advancing phthisical group. The cause of the psychoneuroses is based theoretically on three factors; one is a tuberculo-toxemia causing degeneration of the neuron, another is the rationalistic theory of a reaction of the patient to a change in the patient's environment, and the third the subconscious feeling of organ insufficiency, applying Freud's reasoning except that in the place of sex consciousness he places the consciousness of

organ deficiency. The predominating symptoms of the tuberculous psychoneurosis are egoism, optimism and increased sex impulse. Each of these groupings is described in detail, with references to a very large literature.—*Die tuberkulöse Psychoneurose, G. Ichok, Zeitschr. f. Tuberk., February, 1920, xxxi, 334.*

Right Sero-Pneumothorax with Subsequent Left-Sided Effusion.—A young man of 23 with an artificial right-sided pneumothorax developed an effusion on this side which was left alone for a number of months. Later on he developed pain on the left side, with friction rub, higher temperature and general prostration. Exploratory puncture on the left side revealed nothing, whereas a puncture of the right side, immediately after, yielded 1000 cc. of pneumothorax exudate followed by temporary relief. A few days later the condition became very alarming and this time the signs on the left side were much more definite. An exploratory puncture was made and 2000 cc. of clear serous fluid were removed. Thereupon definite improvement followed and several weeks later the fever disappeared. The treatment was carefully continued and the patient is once more up and about.—*Ein Fall von rechtsseitigem Pneumothorax artificialis mit linksseitiger Pleuritis exsudativa, E. Als, Zeitschr. f. Tuberk., February, 1920, xxxi, 333.*

Pott's Disease in Adults.—Doche found no tenderness on pressure in about 33 per cent of thirty-one cases of caries of vertebrae in the dorsal region, and in 25 per cent of 102 in the lumbar region in his 140 cases of Pott's disease in soldiers. Many of the men had been treated for months and even years for neuralgias of different kinds, gastralgia, kidney and liver colic, sciatica and torticollis, before any one had thought of incriminating the spine. Lateral curvature was evident in thirty of the 140 cases, and two-thirds of the men were unable to bend the trunk forward or sideways, but not one of the total number was able to stretch his spine; hyperextension was absolutely blocked. All were given the regular helio-marine course of treatment at the sanatorium in his charge at Arcachon, and all without fistulas recovered, while the mortality was high among the men with infected fistulas. A tragic feature was that, among the forty-three with fistulas, in some they had been deliberately induced by opening up a closed and cold abscess in the iliac or lumbar region. The strain and privations of the war had reduced the vitality, but notwithstanding this the results of treatment were uniformly good when there was not some grave tuberculous lesion elsewhere or a spontaneous or operative fistula. Immobilization was with a cast in two parts. The front part was removed for the general sun bath; then it was replaced and the patient turned over, and the posterior part of the cast removed for exposure to the sun anew. Thus the sun baths were total while the immobilization was complete throughout. The neuralgic pains were not modified by the heliotherapy, and sometimes they compelled extension. All were kept reclining until six or eight months had elapsed since the last clinical symptoms. The abscesses were punctured; spontaneous resorption was very rare. In the cases with infected fistula, ample drainage and irrigation by the Carrel-Dakin method seem to offer a promise of better results, but experience with this method is too recent for a decisive judgment. —*Considérations cliniques et thérapeutiques sur 140 cases de mal de Pott de l'adulte. Résultats obtenus par la cure hélio-marine, J. Doche, Presse Méd., January 14, 1920, 35.*

Hypothyroidism in the Course of Tuberculosis.—A case showing symptoms of hypothyroidism was studied in a soldier, twenty-four years of age, with signs of disease at the left apex. Treatment was accompanied by an abnormal increase in weight and after about two months by the appearance of a dry papulo-erythematous eruption of the face and a furfuraceous desquamation of the whole body. There was no fever. Treatment with thyroid extract produced rapid cure.—*Apparition d'hypothyroidism dans une évolution tuberculeuse, Th. Stephani, Rev. méd. de la Suisse Rom., February, 1920, xl, 108.*

Nontuberculous Pulmonary and Glandular Infections.—The six cases enumerated—an endocarditis with a degenerative nephritis and general anasarca; bronchiectasis of probable syphilitic origin with an obliterative pleuritis and interstitial pneumonia; a case of bronchiectasis of unknown origin; a pleuropneumonic process and an abscess of the lung, both following tonsillectomy, and one with a foreign body in the pleural cavity—all show marked pulmonary findings of a chronic type in the lower lobes of the lungs. All closely resemble tuberculosis, and all have been called tuberculosis of the moderately advanced or of the far-advanced stages. The chief points of differentiation are: (1) Nontuberculous processes are usually at the bases of the lungs, whereas tuberculosis is more frequently at the apices. (2) Though the pulmonary findings are extensive and of the type of an acute active tuberculous process, the

constitutional symptoms are slight in comparison. (3) Although there often is a large amount of purulent sputum, repeated examinations for tubercle bacilli are negative. (4) At times a definite diagnosis can be made only by prolonged observation, the course of the disease clearing up the difficulty. We should always bear in mind that tuberculosis may be present despite negative evidence, yet it is more urgent to go to the other extreme and refrain from stamping the patient as tuberculous without positive evidence. While hemorrhage or blood-spitting is a reasonably sure sign of tuberculosis, we should always bear in mind that it is frequently caused by high blood pressure and arteriosclerosis, mitral stenosis, bronchiectasis, and malignant tumor. The laboratory and X-ray examinations are valuable aids in clearing up some cases. Two cases admitted as tuberculous adenitis turned out to be Hodgkin's disease.—*Nontuberculous Pulmonary and Glandular Infections, Admitted to the Municipal Tuberculosis Sanatorium, A. J. Hruby, Bull. City of Chicago Mun. Tuberc. San., November, 1919, i, no. 10.*

Influenza and Pulmonary Tuberculosis.—Dorn, after citing the experiences of numerous other investigators in regard to the effect of influenza upon pulmonary tuberculosis, gives statistics of the epidemic of influenza at the Wilhelmsheim Sanatorium in the summer of 1918. There were then 139 army patients, 39 civilian patients and 48 employees. In the three weeks period between the end of June and middle of July, 1918, 85 army patients, 20 civilian patients and 12 employees were taken sick with influenza. Six of the employees were tuberculous. So that, of a total of 184 cases of pulmonary tuberculosis, 111 had influenza. Of these 111, according to the Turban-Gerhardt classification, there were 27 in the first stage, of whom 2 had positive sputum and one tuberculous laryngitis; 17 in the second stage, of whom 5 had positive sputum, one a pneumothorax, one a perirectal abscess and one testicular tuberculosis; and 54 were in the third stage, of whom 52 had positive sputum, 7 had tuberculous laryngitis, one a perirectal abscess, one a knee tuberculosis and 6 pneumothorax. It is seen that most of the tuberculous cases were severe with complications. In only two did the influenza have any lasting untoward effect. In three cases there was a temporary flare-up. In the fall of 1918 there was a second epidemic in the surrounding country, and the population of the sanatorium remained practically the same as in the summer. There were only two cases that developed influenza, one a healthy employee seventeen years of age who died of influenza, the other a French soldier who was brought in ill and died. None of the patients became ill. Dorn feels from his experience that the tuberculous are more resistant to influenza, because their long illness has probably given rise to more numerous antibody formations.—*Grippe und Lungentuberkulose, E. Dorn, Zeitschr. f. Tuberk., December, 1919, xxxi, 257.*

Influenza and Tuberculosis.—The author puts the following questions: (1) How does the grippe influence an already existing pulmonary tuberculosis? (2) Has it caused fresh outbreaks of tuberculosis or made manifest latent lesions? (3) What nontuberculous chronic pulmonary lesions are known to be caused by influenza? The answer, based on his own observations and a study of the literature is as follows: (1) The influence of the grippe depends on the extent of the tuberculosis. Incipient apical lesions and benign cirrhotic processes are usually not influenced; grave cases usually change for the worse. In one case of apical tuberculosis a miliary dissemination of tubercles took place coincident with a grippe pneumonia. (2) A latent hitherto undiscovered tuberculosis may become manifest after influenza. In the author's cases these lesions were centrally located. This is due to grippal swelling of the mediastinal lymph nodes which continues for a time after the attack and furnishes a locus minoris resistentiae for the implantation or spread of tuberculosis. This is in marked analogy to measles. (3) A case of chronic pneumonia was observed to follow grippe.—*Ueber die Beziehungen zwischen Grippe und Tuberkulose, mit besonderer Beruecksichtigung der Entstehung zentraler Lungentuberkulose nach Grippe, J. E. Keyser-Petersen, Münch. med. Wchnschr., October 31, 1919, lxvi, 1261.*

Sanatorium or Home Treatment in Relation to Hardening.—Köhler divides life into three periods: the first, from infancy to thirty years; the second, from thirty to thirty-five years, being a transitional period; and the third, from thirty-five years upward, the period of katastasis. During the first period, exercise, cold baths and an outdoor regimen stimulate the production of body heat actively. In the last period, from thirty-five years on, the heat must be supplied externally, by hot bathing, application of heat, warmer clothing, etc., and the patient should not be exposed to the rigors of extreme cold, sudden changes, etc. In the transitional period, from thirty to thirty-five years, great care must be taken to determine whether the body reacts to the

stimuli of the first period with heat production and hardening, or whether lowered vitality results. In the event of any disease which lowers the vitality, such as tuberculosis, the period of katastasis may be advanced and the patient must be treated accordingly. Köhler calls the first period the "exercise" period, and believes that people who respond to the sudden changes of temperature and the exposure are really undergoing a form of exercise, and that those who do not react favorably should be put on a therapy which excludes rigors and changes in temperature, exposure, cold bathing, etc., supplies heat externally and favors an indoor regimen rather than outdoor during cold weather.—*Zur Heilstättenbehandlung und häuslichen Behandlung der Lungentuberkulose sowie zur Theorie und Praxis der Abhärtung, F. Köhler, Zeitschr. f. Tuberk., February, 1920, xxxi, no. 6, 321.*

The Village Settlement and Workshop Treatment of Tuberculosis.—Sanatorium treatment of the tuberculous has failed, to some extent at any rate. Such treatment seldom cures but rather arrests the disease sufficiently for the subject to go out into the world to fight the battle of life, more especially if he is a manual worker. One great object of sanatorium treatment used to be to accustom the patient to agricultural pursuits, gardening, and so on, the argument being that open air life was the only one suited to the consumptive. Some obvious facts were overlooked when propounding and putting into practice this theory. In the first place, agricultural labor is a skilled form of labor, and a hard and trying form of work with long hours. The adult consumptive is never likely to learn the work sufficiently well to earn decent wages, and although the work is done in the open air the conditions, atmospheric and otherwise, under which it is performed are much too severe a tax on a constitution the vitality of which has been sapped by tuberculosis. The individual in such a position is not able to earn enough to feed himself as his condition requires, and if he has a wife and family the state of affairs is desperate. However, there is no need to elaborate this point, as it is now well understood that as a rule the consumptive is not fitted for agricultural labor or even for gardening. If he has been an industrial worker or an artisan, he had better go back to his old trade or craft unless it is manifestly contraindicated by the unhealthiness of the occupation. In any event, in nine cases out of ten the tuberculous person is more likely to retain a fair measure of health working indoors at a trade he knows than as an unskilled outdoor worker earning starvation wages and exposed to the vicissitudes of a changeable climate. In certain parts of this country an out of door life can perhaps be followed by the consumptive with benefit to his health and a fair living wage, but generally speaking, and certainly in Great Britain, out of doors agricultural labor has been tried for the consumptive and found wanting.

But another difficulty arises. How are those partially disabled by tuberculosis of the lungs to find employment in factories or workshops? They cannot do a man's work, cannot keep regular hours of work, and in addition the ordinary normal workman objects to working side by side with the consumptive. A scheme has been proposed and put into practice in this country and in Great Britain whereby colonies and industrial centers are established for those suffering from pulmonary tuberculosis, and the plan seems to have met with success. Of course all is not plain sailing for such institutions, but as adjuncts to the sanatorium they should help to solve the problem of the consumptive, possibly with a wife and family, who is able to work, but only under suitable conditions. The colony is at the same time agricultural and industrial and should provide the means for rendering many consumptives self-supporting and self-respecting. It must be borne in mind that in the case of the tuberculous the mind has a great influence over the health and that if the sufferer is fairly contented, this mental outlook will react favorably on the physical conditions. The colony system is now on trial and extension depends upon how it stands the test. The March issue of *Tubercle*, the new British monthly dealing with tuberculosis, points out that many men will not care to abandon their urban homes and plant themselves and their families in an unknown, even though a more salubrious environment. This sounds true, and means must be found to render the colonies attractive or they must be devised on another plan. For the sake of the community at large, some such seheme should be established, for it is not only a question of the consumptive himself but of the race.—*Editorial Note, N. York M. J., April 24, 1920, cxi, 732.*

Deaths and Death Rates from Pulmonary Tuberculosis in New York City and State.—The following tables, showing the deaths and death rates from pulmonary tuberculosis for New York City and State, for February, March and April, during the years 1913 to 1920, inclusive, and graphs for the years 1913 to 1920, to April, 1920, are taken from the *Monthly Vital Statistics Review, New York State Department of Health, April, May and June, 1920, New Series, vol. i, nos, 2, 3 and 4.*

Pulmonary tuberculosis: deaths and death rates, New York State and large subdivisions, February, 1913 to 1920*

MONTH	YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE							
						Total		Urban		Rural		Institutional districts	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
February average	1913–17	1,226	158.0	778	185.5	448	125.8	233	134.9	215	117.3		
February	1913	1,201	160.9	776	194.5	425	122.4	228	134.9	197	111.1		
February	1914	1,210	159.0	764	180.8	446	126.8	226	131.0	220	123.8		
February	1915	1,202	154.9	793	189.1	409	114.9	204	118.1	205	111.9		
February	1916	1,252	153.4	752	169.4	500	134.4	277	152.9	223	116.8		
February	1917	1,265	157.1	803	182.4	462	126.7	231	129.8	231	123.7		
February	1918	1,287	157.0	786	174.5	501	135.8	239	131.8	209	111.3	53	
February	1919	1,216	145.8	757	164.3	459	123.0	190	102.9	215	113.9	54	
February	**1920**	**1,222**	**139.2**	**701**	**143.8**	**521**	**133.4**	**226**	**116.7**	**236**	**119.8**	**59**	

* Deaths per 100,000 population per annum.
Data from New York State Health Department Annual Reports and Monthly Bulletins, or specially computed.

Pulmonary tuberculosis: deaths and death rates, New York State and large subdivisions, March, 1913 to 1920

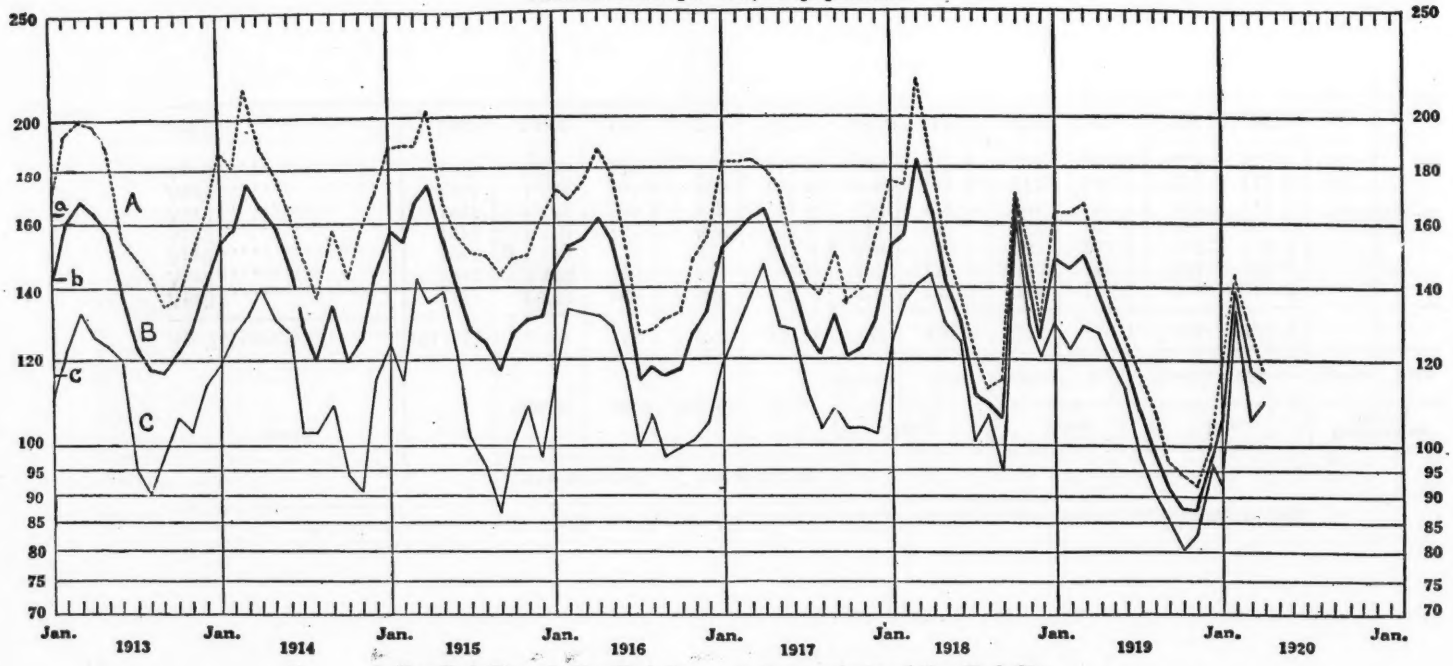
MONTH	YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE							
		Number	Rate	Number	Rate	Total		Urban		Rural		Institutional districts	
						Number	Rate	Number	Rate	Number	Rate	Number	Rate
March average	1913–17	1,422	165.7	888	191.2	534	135.5	288	150.6	246	121.2		
March	1913	1,395	168.8	882	199.8	513	133.4	262	140.0	251	127.9		
March	1914	1,473	174.8	960	212.5	513	132.1	275	143.9	238	121.0		
March	1915	1,442	167.8	877	188.9	565	143.3	313	168.7	252	124.2		
March	1916	1,359	155.7	831	175.0	528	132.7	306	158.0	222	108.7		
March	1917	1,441	161.7	890	183.1	551	136.8	285	144.7	266	128.7		
March	1918	1,658	183.2	1,083	217.6	575	141.0	285	142.0	233	112.1	57	
March	1919	1,383	149.8	852	167.3	531	128.8	246	120.4	226	108.2	59	
March	1920	1,107	118.1	665	127.7	442	106.0	183	88.5	220	104.6	39	

Pulmonary tuberculosis: deaths and death rates; New York State and large subdivisions, April, 1913 to 1920

MONTH	YEAR	NEW YORK STATE		NEW YORK CITY		REST OF STATE							
						Total		Urban		Rural		Institutional districts	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
April Average	1913–17	1,397	168.1	859	191.1	537	140.8	277	149.7	261	132.9		
April	1913	1,357	169.8	847	198.2	510	137.0	256	141.4	254	133.7		
April	1914	1,389	170.3	822	188.0	567	150.9	273	147.7	294	154.4		
April	1915	1,442	173.5	923	205.4	519	136.1	302	163.2	217	110.5		
April	1916	1,370	162.2	859	187.0	511	132.7	258	137.6	253	128.1		
April	1917	1,425	165.3	846	179.9	579	148.6	294	154.2	285	142.5		
April	1918	1,445	165.0	876	182.0	569	144.4	272	140.1	253	125.8	44	
April	1919	1,236	138.3	728	147.9	508	127.4	223	112.7	228	112.8	57	
April	**1920**	**1,046**	**115.1**	**591**	**117.1**	**455**	**112.5**	**176**	**87.8**	**225**	**110.3**	**54**	

DEATH RATE FROM PULMONARY TUBERCULOSIS: NEW YORK STATE, NEW YORK CITY, AND STATE EXCLUSIVE OF NEW YORK CITY, BY MONTHS, 1913 TO 1920.

Annual rates per 100,000 population

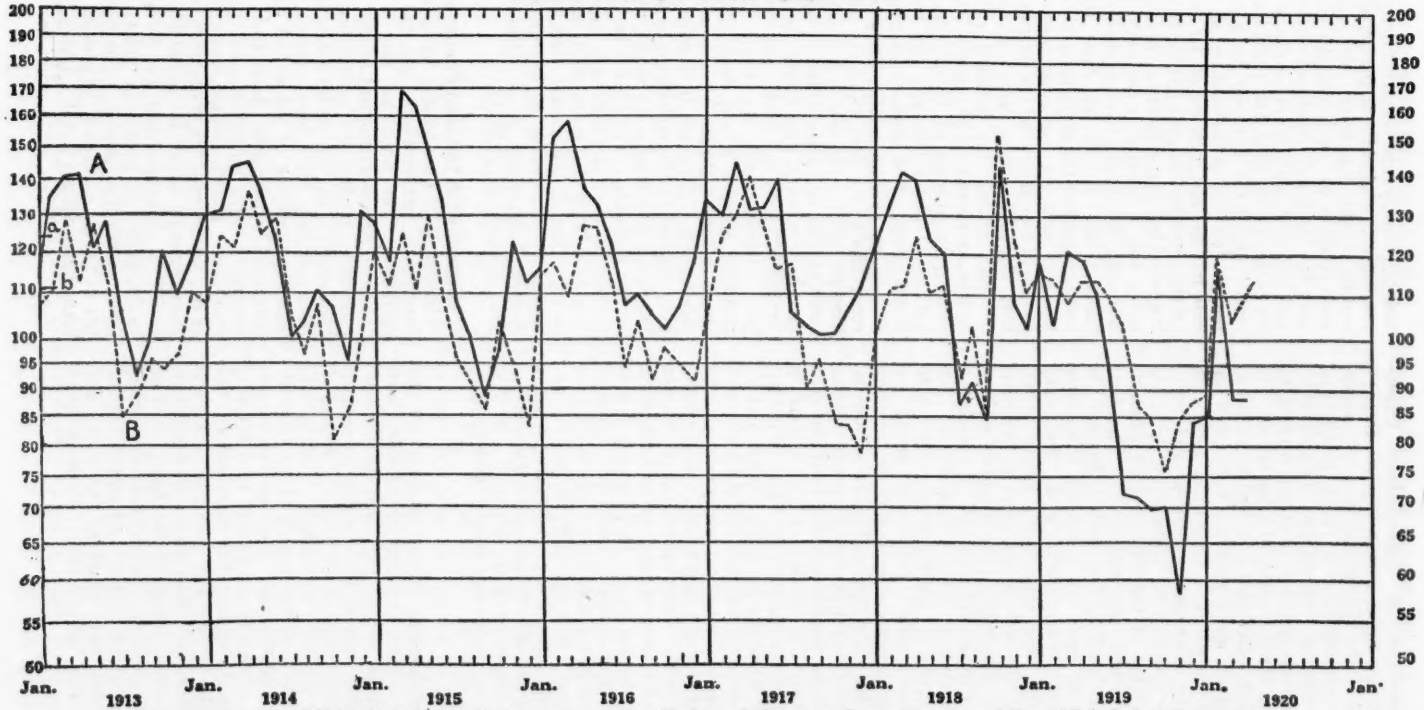


A, New York City; B, New York State; C, State exclusive of New York City

Average annual rates: 1913–1917, a, 164.1, New York City; b, 142.6, New York State; c, 117.1, State exclusive of New York City

DEATH RATE FROM PULMONARY TUBERCULOSIS: NEW YORK STATE (EXCLUSIVE OF NEW YORK CITY), URBAN AND RURAL AREAS* BY MONTHS, 1913 TO 1920

Annual rates per 100,000 population



A, Urban; B, Rural. *"Urban" includes all cities (except New York) and three very large villages, and "rural" includes all remaining districts except institutional; see tables 9-10. Average annual rates, 1913-1917: a, 123.9, urban; b, 110.8, rural

Treatment of Tuberculous Osteo-Arthritis.—In a diseased joint there is venous stasis, diminished flow of arterial blood, extravasation of lymph, sluggishness in metabolism, malposition through reflex muscular contraction, rarefying osteitis, all assisting the formation of granulations. In treatment, tuberculin, rest, and heliotherapy have given good results. Tuberculin increases the patient's resistance; while rest, especially continued extension, and heliotherapy improve the circulation, favor the reabsorption of the extravasated products and overcome the contraction. The bone graft, as used by the author, hastens the process of repair by producing condensing osteitis in the surrounding area. In placing the graft, the tuberculous tissue is not touched; the graft is placed so as to extend from the diaphysis to the epiphysis without touching the articular cavity. To produce a rapid deviation of the blood current, two lateral grafts are placed in the cellular subcutaneous tissue. While the grafts are growing, extension by means of bandages and weights is maintained for three months; after that time the patient can get up wearing light plaster bandages which keep the joint immobile. The course of the disease is studied by the roentgen ray which shows the clearing up of the rarefying osteitis, and by palpation which shows when the tenderness disappears. The subcutaneous lateral grafts are then removed, and within ten or twelve days after this slight operation, the patient is turned over to a masseur to bring back mobility to the joint. Heliotherapy is also used. Improvement is noted in the general condition in the first days following the intervention. It is especially in cases of accentuated tuberculous cachexia that operation is urgent.—*Treatment of Tuberculous Osteo-Arthritis by Bone Grafts, C. R. Lavalle, Surg. Gynec. and Obstet., March, 1920, xxx, 239.*

Heliotherapy.—After referring to the work of others, and especially Rollier, with heliotherapy in bone and gland tuberculosis, the author reports six cases of pulmonary tuberculosis treated by Rollier's method of gradual exposure to sunlight. All of the patients were males ranging in age from fifteen to sixty-five years; all were active advanced or second stage cases with tubercle bacilli in the sputa. The treatment was begun early in July and continued until the end of October. Exposures were made only on 107 days, owing to the many days of rains and showers. Determinations of blood pressure, blood counts, and estimations of hemoglobin were made at first every few days, later every week. Patients were weighed weekly, and temperature, pulse and respiration noted daily at the beginning and ending of the treatment. Frequent notes were made as to cough, amount of sputum, appetite, sleep, and condition of the bowels, and results of sputum examinations. Of the six patients, two died, and three became arrested and have returned to work. One patient left the sanatorium as an arrested case but has not been traced for two years. Of the two who died, one left the sanatorium improved but died eighteen months later; the other had a greatly hypertrophied heart, although his death was probably due to tuberculosis. In all the cases the heliotherapy lessened the sputum, improved appetite and sleep; in five cases improved the cough; in two improved the temperature; in four, slowed the pulse rate; four cases (two of them among the arrested cases) lost weight, an average of 2¾ pounds; two gained weight, an average of 7½ pounds. Observations of blood pressure, red and white blood counts, and amount of hemoglobin showed no definite relation between these conditions and a gain or loss in general or lung conditions. In addition, several acute cases of bone and gland tuberculosis in children have recently been treated by the Rollier method for a few weeks, and the results have demonstrated its value. Sunlight properly applied is our best therapeutic agent in the treatment of bone and gland tuberculosis. Although it is most successfully applied in the mountains or at ocean beaches, it also gives good results inland and on the lowlands. The results in the small number of cases of pulmonary tuberculosis treated indicate that it may be of more value in this form of the disease than has been supposed.—*Concerning Heliotherapy in Pulmonary Tuberculosis, J. B. Dinnan, Med., Rec., January 10, 1920, 62.*

Mishaps with Induced Pneumothorax.—Instances of disagreeable by-effects with therapeutic pneumothorax are not always published. The physician should not be too timid nor over-confident in applying the procedure, relying too exclusively on the manometer. In the writer's extensive experience there have been several cases in which hemoptysis or subpleural and subcutaneous emphysema developed, four of secondary valve formation, and one of gas embolism. Faulty technic was responsible in this latter case; the young man had long been returning weekly for insufflation of 200 or 300 cc. of oxygen and was doing finely, having gained 10 pounds in weight and the fever having disappeared. The needle was felt as having traversed the pleura, but the manometer did not waver. Instead of wait-

ing for the usual fluctuations, the insufflation was started. The patient complained at once of intense precordial pain and numbness in his arm. The needle was withdrawn, but the young man became unconscious after some convulsive movements, with complete arrest of the heart action and breathing. Under artificial respiration, injection of camphorated oil and inhalation of oxygen he promptly revived but seemed dazed. This and facial paralysis persisted till night, and there was some vomiting. But all was normal the next day and he had no remembrance of the mishap. The lesson from it is that the gas must not be pumped in before the manometer gives the signal. If a little is allowed to enter, it should merely flow in gently. The whole storm passed over in three minutes; probably the fact that oxygen was the gas being used had a great influence on the promptness of the recovery.

The symptoms from secondary valve formation are those of progressive suffocation, an opening allowing the gas to pass, but a valve shutting off its return. Intense pain at the site of the insufflation and progressive dyspnea half an hour to two hours afterward compelled puncture to release the gas, unless relief was obtained by a spontaneous subcutaneous emphysema. The pressure had increased from 0 to 20 in one of these cases, and the heart was much hampered. The symptoms kept recurring through three days in this case. In all of this group of four the pulmonary lesions were grave and of long standing; the traction on fibrous bands evidently tore out a piece from the parenchyma of the lung during coughing. Hemoptysis was due to pricking a blood vessel, or to activation of the focus in the other lung from traction by bands, or to inadequate compression. In one case described, severe hemoptysis followed insufflation of small amounts of gas, 300 or 500 cc., but it ceased when the amount was increased, and marked improvement followed. —*Accidentes por neumotorax, A. Cetrángolo, Seman. Med., November 13, 1919, xxvi, 603.*

Chemistry and the Laws of Immunity in the Treatment of Tuberculosis.—The tubercle bacillus is protected by waxy substances, consisting chiefly of unsaturated highly complex alcohols and equal quantities of phosphatides with which they form a colloidal complex, which in turn exists in close union, probably chemical, with the protoplasmic substances of the tubercle bacillus. Saponification breaks up this complex without destroying important immunizing substances. Repeated experiments proved that esterification of the fatty acids with ethyl alcohol forms a valuable immunizing substance; and esterification of the higher alcohols with salicylic, benzoic, acetic, or other suitable acids establishes a new side-chain group which enhances the reactivity between the antigens themselves and the receptors of the tissue cells, so that absorption of these alcoholic esters when injected even in doses of 3 to 5 cc. takes place in a few days and specific wax-digestion-ferments form in sufficient concentration to split the protective waxes from the tubercle bacillus with its resulting disorganization and destruction. On these principles an immunizing substance, given the name of mycoleum, was produced, which is essentially a physical mixture of the combined esters of the higher alcohols with the ethyl esters of the fatty acids in the same proportion as they originally exist in the wax of the tubercle bacillus, free from lipoids, proteids, and other impurities. This substance was used with success in the treatment of all forms of tuberculosis, except the acute miliary type of the disease. Caseation is largely done away with and improvement is seen even in advanced stages of the disease. In the treatment of many hundreds of cases the death-rate has been less than two per cent five years after treatment, including all forms and stages of the disease. The rules for treatment are similar to those for syphilis—intensive at first with ever widening intervals between treatments.—*Coördination of the Principles of Chemistry with the Laws of Immunity in the Treatment of Tuberculosis, B. S. Paschall, N. York M. J., January 31, 1920, cxi, 184.*

Genito-Urinary Tuberculosis Treated with Tuberculin.—The author reports 8 cases of genito-urinary tuberculosis and states that about 40 other cases were treated at All Saints Hospital. All showed marked improvement. Contraindications to tuberculin are continued fever, albuminuria and epilepsy. Early cystoscopic examination and testing with tuberculin should be done in every suspicious case. Treatment should be begun when the tuberculin test is positive, whether tubercle bacilli are found in the urine or not. While the best results are obtained in the earlier stages of the disease, treatment should be given at any stage. The tuberculin injections are given twice a week, in increasing doses. The doses are increased until a reaction is obtained. A rise of temperature is almost invariably a prelude to improvement. The first course of treatment should be carried out from six months to a year; a second or third course may be required at varying intervals. Different preparations of tuberculin may be used to advantage.—*Genito-Urinary Tuberculosis Treated with Massive Doses of Tuberculin, R. Creasy, Lancet, March 6, 1920, 542.*

Tuberculin in Bone and Joint Tuberculosis.—From their experience with tuberculin in bone and joint tuberculosis the authors conclude that the use of tuberculin in these cases in conjunction with proper orthopedic care cuts down the time required to produce a cure from 50 to 75 per cent and makes the cure more permanent. In pus cases tuberculin should be used in conjunction with bismuth paste and suitable vaccines. A few months of this combined treatment usually stops the discharge. No set rules can be given for its administration in all cases; the individual patient and his reaction to the treatment must be studied. A tuberculin reaction should not occur; but if it does, the dosage is reduced to one-tenth the amount. The dilutions most frequently used were 1 in 100,000 and 1 in 10,000. Several courses of treatment may be given at short intervals.—*Tuberculin in Bone and Joint Tuberculosis, S. A. Twinch and Alfred Stahl, J. Orthop. Surg., March, 1920, xviii, 151.*

The Chaulmoogric Acid Series in Leprosy and Tuberculosis.—A series of experiments led to the conclusion that the bactericidal active substances of chaulmoogric oil are the fatty acids of the chaulmoogric series, and the bactericidal activity of these acids is specific for the acid fast group of bacteria and inactive against other organisms. This specific bactericidal activity is a function of the carbon ring structure of the molecule of the chaulmoogric acid series which so far as is known is found only in chaulmoogric oil and in oils of certain plants closely related to the *Taraktogenos kurzii*. The fatty acids of cod liver oil, the salts of which constitute the sodium morrhuate advised by Rogers for the treatment of tuberculosis, do not possess this specific power. This bactericidal activity of the chaulmoogric acids, together with the clinical results obtained in leprosy, furnish theoretical grounds for the use of the chaulmoogrates in the treatment of tuberculosis. Further experiments are necessary to determine their practical value.—*Chemotherapeutics of the Chaulmoogric Acid Series and Other Fatty Acids in Leprosy and Tuberculosis, E. L. Walker and M. A. Sweeney, J. Infect. Dis., March, 1920, xxvi, 238.*

Inhalation Treatment.—For many years Robinson has been using and recommending a perforated zinc inhaler, the sponge of which is saturated with beechwood creosote, spirits of chloroform and alcohol, equal parts. The patient breathes naturally and without effort and uses the mask at first only a few minutes and gradually almost all the time. The mixture must be renewed whenever the odor of creosote becomes less appreciable. The urine must be watched and if a trace of albumin appears the inhalations should be somewhat restricted. Creosote can be given in addition by mouth. When the cough is very severe, pure chloroform may be used for a while in place of the spirits but the inhalations should not be prolonged and the effect carefully watched. Creosote properly used is the only drug that has a real value in pulmonary tuberculosis.—*The Inhalation Treatment of Pulmonary Tuberculosis, B. Robinson, Med. Rec., January 24, 1920, xcvii, 123.*

Prognosis in Pulmonary Tuberculosis.—Prognosis in pulmonary tuberculosis depends of course upon the stage of disease at which treatment is begun, and upon the presence or absence of complications, but also very largely upon the patient's own attitude and his willingness to follow the proper course of treatment with absolute faithfulness. Hence it is very important that the physician should know how to talk to the tuberculous patient and to explain to him the reason for, and the importance of, each detail of treatment. The need of rest, fresh air, proper food and a careful regulation of all the habits of life should be emphasized. The patient should be told that it is not necessary for him to go to another climate, or even to go away from home at all, if he will make his home a sanatorium with the physician as director. Regular examinations should be made at certain intervals, and evidences of improvement carefully noted and pointed out to the patient. Gain in weight, lessened cough, lowered temperature, better color and better appetite—all indicate a favorable prognosis. The Arneth nuclear count is also of value in so far as a constant increase is favorable. If physicians will take time to discuss things sympathetically with the patient and encourage him in carrying out the necessary treatment thoroughly and for a sufficient length of time, the prognosis will be very noticeably and favorably changed.—*Prognosis in Pulmonary Tuberculosis, A. Henry, Med. Rec., February 14, 1920, xcvii, 272.*

Care of Tuberculous Children.—Sandy Point Branch, Hayling Island, England, was chosen as an ideal place for surgical tuberculosis in children on account of its abundant sunshine, extensive shore with considerable tidal excursions, sandy soil, slight or moderate rainfall, lack of trees, clear atmosphere free from dust, hills protecting against cold winds and rain, bracing climate, beach adequate for unrestricted

use of patients. Patients who are toxic and cachectic, who have chronically infected sinuses or cervical adenitis, and convalescents do well in such a place. Children are instructed in various subjects. They sleep on open verandas, on mattresses which are electrically heated. This is the best and most labor-saving method of keeping the patients uniformly warm. In the Treloar Cripples' Hospital they have a follow-up system for discharged patients. Provision is made for patients who need further treatment after discharge from the hospital, by sending them to various sanatoriums. A postgraduate course for those interested in surgical tuberculosis is conducted at Alton Hospital. Recently chemotherapeutic substances such as copper, iodine, chlorine and brass compounds have been employed for external tuberculosis and lupus. There is plenty of sunshine in England for a great part of the year to make heliotherapy practical. Sunshine acts directly on superficial lesions by its bactericidal power and indirectly by inducing favorable constitutional reactions. The beneficial influence on deep seated lesions depends on the amount of skin pigmentation. Pigmenting power is in direct ratio with resisting power and this has a prognostic value. The effect of the sun cure is largely psychological.—*Care of Tuberculous Children. Some Recent Innovations and Methods of Treatment at the Treloar Cripples' Hospital, Alton. H. Gauvain, Brit. J. Tuberc., April*, 1920, *xiv*, 4.

Climate in Tuberculosis.—Guiding principles in the matter of climate can be evolved only upon the basis of knowledge of the personal factor, in the light of which domestic and terrestrial climates derive their significance. The personal climate is within the person's own clothes. Peculiarities of clothing, personal cleanliness and skin hygiene will do much to modify terrestrial and domestic climate. Foremost in the personal climate is the skin, since through it the greater part of the effect of climate is transmitted to the organism; hence a proper training of the skin in infancy and childhood constitutes the important part of the climatic prophylaxis in tuberculosis. The thing to avoid for the skin is the dull, uniform, nonstimulating environment. The climate with considerable variations of temperature of day and night, of sun and shade, of indoor and outdoor air, prevents a slothful functioning of the dermal organ. Also the radiant quality of the environmental temperature is most significant. The radiant heat of an open fire facilitates the bearing of low indoor temperatures, and reproduces for the skin the quality of the Alpine climate. The advantages of the external physical conditions of the home or the place of work come under the domestic climate, and are of paramount importance since but few persons have the opportunity of changing the terrestrial climate. Ventilation, public and private, fresh air, and cool air are advantages available in the domestic surroundings. A higher cooling power not only increases metabolism during the exposure, but it also raises basal metabolism. Largely in this lies the benefit of open air treatment of children and consumptives. The effect upon man made by the terrestrial climate is determined by the demand it makes upon the patient's production of heat. Hubbard has reduced the value of the various factors in climate, such as temperature, movement of air, humidity, atmospheric pressure, insolation, etc., to this common standard. Of all these factors, altitude above the sea level lends itself to a precise estimation of its effect in terms of increase of the red blood cells. These increase numerically with ascent to any altitude short of one which causes mountain sickness. Although the altitude polycythaemia is no longer considered an essential of mountain therapy (the cell increase being merely a phsyiological adaptatation to compensate for the rarefaction of the atmosphere), nevertheless the actual increase of this blood tissue may well produce the remarkable stimulating effect of the change from sea to mountain level. This corpuscular increase persists for some time after the descent to sea level and offers a reasonable explanation for the feeling of well being which follows a holiday spent wisely in the mountains. Every individual has his own optimum altitude at which to live All sorts of pains may disappear at certain altitudes in certain persons. An indirect effect of altitude rarefaction of the air is increased insolation. The shorter light waves at the violet end of the spectrum being poorly absorbed by the thin air, cause a pigmentation of the skin. This is of therapeutic value. Prognosis is bad in tuberculous patients who fail to tan. The pigmented cells very likely turn to some useful purpose the energy of the ultraviolet rays. Bernard's and Rollier's treatments are based upon the application of this principle. A pigmented skin furthers adaptation to varying climatic influences. The bulk of evidence supports the view that no climate possesses therapeutic specificity. The choice of climate is to be determined rather by the response of the patient than by the assumed influence on his disease. The traditional belief that a hemorrhagic tendency contraindicates high altitude is based upon the unfounded opinion that

blood-pressure rises with elevation. However, there cannot be any doubt of the striking influence of altitude upon asthma, especially in children. Finally, the mental and emotional quality of the patient is to be reckoned with in the choice of climate. The view held by Celsus that the worst climate for the patient is that which made him ill, and the very opposite view held by the modern medical economist, that the cure is best made in the climate where the patient has to live after his cure, are conciliated by the above considerations.—*Climate in Tuberculosis, E. Morland, J. State Med., May, 1920, xxviii, 129.*

Antituberculosis Vaccine.—The endotoxins of the tubercle bacillus are derived either from its fatty capsule or from its protein stroma. Those derived from the capsule are the etherobacillin and the chloroformobacillin of Auclair, the former producing caseation, the latter sclerosis, while both can induce fibrinous pneumonia and suppuration. From the stroma is derived the paranucleoalbumin of Auclair and Paris, which induces congestion and infiltration of the lungs, spleen, etc., and contributes largely to the tuberculous cachexia. The tubercle bacillus exotoxins produce nutritive and vasomotor disorders and fever. The tuberculosis vaccines heretofore used did not contain all the above elements and hence called forth only a partial reaction; they were therefore unsatisfactory. The Dàvila vaccine contains all the endo- and the exotoxins of the tubercle bacillus, attenuated in such a manner as to make it free from violent reaction without impairing its immunity producing property. The initial dose is 2 mgm., gradually increased to 32 mgm. or more. All the untoward effects of the tuberculins are foreign to the Dàvila vaccine even in larger doses. It may be used in the pretuberculous stage as well as in the active process, and in equal doses in children and adults. Children tolerate 32 mgm. at the first administration and as much as 74 mgm. at the second.

The curative and immunizing action of the vaccine is due to its stimulating effect upon the production of antibodies, which neutralize the disease poisons. This is a very complex process. Thus, according to Wolff-Eisner, tuberculolysin, an antibody called forth by the protein endotoxin, lysinizes the toxin in such a manner as to split it into molecules more toxic than the parent molecule. The split products cause the inflammatory irritation in the tuberculous focus, and produce the specific and nonspecific defenses. The focal hyperemia and exudation, however, must not be excessive. Fever and other signs must be avoided. The difference between natural and artificial tuberculinization, according to Sahli, lies in the fact that in the artificial process only a small portion of the toxin comes in touch with the focus, most of it being acted upon by the healthy tissues. Another essential difference is the slow rate of tuberculinization in the natural process. The advantage is on the side of the artificial tuberculinization, especially in the incipient cases. Debility and undernutrition are contraindications. The vaccine has diagnostic value, since it reactivates the von Pirquet reaction. Besides the usual aseptic precautions, the needle and syringe should be cleansed with ether before using. The vaccine is not to be aspirated. The administration is carried out in series of five injections every third or fifth day, commencing with 2 mgm. and increasing each succeeding dose by the multiple of two. In case of reaction from any of the doses that dose is repeated until tolerance is established. The series may be repeated from four to eight times. Fever and intestinal disturbance are contraindications. In such febrile cases one may try to commence with half the usual dose, but generally the treatment is unsatisfactory. In incipient cases a diurnal temperature curve of between 96.4 and 99.1 becomes more level under the influence of the vaccine. Increase of weight is general. Females react less favorably. Hemoptysis calls for a once a week administration of the three lower doses until it ceases. There are no sequelae. Sputum and bacilli increase for a day or two after injection, but decrease thereafter, the sputum becoming more mucoid in character. All other methods of treatment such as climatic, dietetic, rest, etc., augment the effectiveness of the vaccine.—*Atoxic Antitubercular Vaccine, J. Dàvila, Sanidad y Beneficencia, April, 1919, xxi, 356.*

Intracutaneous Tuberculin Treatment of Pulmonary Tuberculosis in Children.—Garcia and Cordero relate their experiences with Mantoux's intracutaneous technic applied in systematic tuberculin treatment of children, analyzing the cases in which no benefit was realized. Those cases, in which the method failed, proved useful guides for selecting other cases for the method and for the proper doses until highly favorable results could finally be counted on. To begin with, they state that dispensary treatment by subcutaneous injection of tuberculin has too many drawbacks and dangers, but the intracutaneous technic is free from these to a large extent, while the response to the intra-

cutaneous injection is an instructive index of the individual tolerance at the moment, often rendering careful analysis of the temperature, weight, etc., unnecessary. The intracutaneous technic allows a tentative course of .tuberculin treatment without danger for the patient, even when it proves ineffectual.—*A propósito del empleo terapéutico de la tuberculina por via intradérmica en la tuberculosis pulmonar de los ninos, J. Garcia del Diestro and B. Cordero, Arch. Espan. d. Pediat., January, 1920, iv, 5.*

Tuberculin in Lupus Vulgaris.—Eleven cases were treated in two groups; the first and smaller one with new tuberculin, the second with O. T. There was distinct improvement in every case of group 1. The old tuberculin however seemed to be of comparatively little value unless given in intensive doses. It is of help in so far as it brings about the regular attendance of the patient. It does not interfere with other methods of treatment.—*The Effects of Tuberculin in Lupus Vulgaris, R. Aitken, Edin. M. J., April, 1920, xxiv, 251.*

Protein Therapy in the Cachexia of Tuberculous Children.—In the early stages, tuberculosis shows a great tendency to spontaneous healing, and any agency which is likely to raise the resistance of the organism will increase the percentage of cures. The prognosis is worst in those cases with extreme cachexia and malnutrition, great weakness, apathy, high fever, complete anorexia and tendency to edema. It was this class of patients in which the authors were interested, and as no means of influencing the active tuberculous process has been discovered up to the present time, they attempted, by means of protein therapy, to combat the cachexia, and in this way increase the general resistance. At first they injected 10 cc. of horse serum subcutaneously twice a week. Later, because of frequent serum reactions, they reduced the amounts of serum injected to ½ cc. at the first injection, then 1 cc., and finally 2 cc. The maximum number of treatments was put at 100. Of 26 almost moribund children so treated, 9 died. In most cases, however, they feel there was a distinctly beneficial effect on the patient, this being manifested by both objective and subjective improvement—better appetite, less apathy, less fever, diminished tendency to edema, and a more marked reaction to the skin tuberculin tests. No focal reactions were observed. Two typical case reports are appended.—*Die Proteinkörpertherapie der Kachexie tuberkulöser Kinder, A. Czerny and H. Eliasberg, Monatschr. f. Kinderh., April, 1920, xviii, 1.*

Artificial Pneumothorax.—Cases of remarkable recoveries from artificial pneumothorax are a part of the records of every sanatorium using it. At the Mt. Regis Sanatorium it has been the rule to establish pneumothorax only in the unfavorable cases, unresponsive to thorough sanatorium treatment. Other cases, however, have likewise shown most gratifying improvement from the procedure. Compression is justified and frequently beneficial in cases with infiltration of all or part of one lung and a moderately diseased area in the other, if there are no complications. Conditions are not the same in all patients as regards the degree of compression required. One patient may stand comfortably only a −2 or 0 pressure—in centimetres of water, while another can submit to +20 or +30—used to break adhesions—without material discomfort. At first 200 or 300 mils of gas are injected, and this amount repeated on the following day. The intervals are then gradually lengthened by skipping one, two, three days, etc.—just slowly compressing until full collapse is attained. To maintain uniform pressure, a close watch is kept over the patient. The fluoroscope permits of judging more accurately the needs in individual cases, the effects of pressure on the mediastinum, the presence and location of adhesions and fluid accumulations, the effects on the free lung, and the meaning of obscure auscultatory signs. Careful surgical technic is essential to success. The site of puncture should be over healthy lung tissue, if possible.—*Artificial Pneumothorax, F. G. Simmons, Virg. Med. Monthly, January, 1920, 257.*

Artificial Pneumothorax.—The ordinary Saugman needle has no provision for excluding communication with the external air when the stopcock is opened to admit the stylet. To obviate this defect the author has designed a special needle with a little stuffing box like that of Potain's aspirator screwed into the mount with a washer to insure perfect tightness. The distance from the stopcock of the needle to the stuffing box is 4.5 cm. It has a round cutting edge rather than a sharp point and a specially constructed holder. In use the holder is adjusted so that the length of needle projecting through the cover-plate corresponds with the estimated thickness of the chest wall, and so that it may be readjusted in situ if necessary. As soon as satisfactory oscillations occur, even an unexperienced assistant, by keeping the holder pressed against the patient's chest, can hold the needle in the proper position without danger of thrusting it in more deeply or partially withdrawing it. The stylet should be long

enough to project about 1 cc. beyond the point of the needle, as it then serves as a probe; it should be ground perfectly flat, so as to push the visceral pleura before it without inflicting a puncture.—*A Note on Artificial Pneumothorax, F. C. Cooley, Brit. M. J., March 27, 1920, 432.*

Treatment of Tuberculous Peritonitis with the Quartz Lamp.—There were 21 cases treated, including 12 children. General exposures were employed with great improvement in all but 6 cases. The result is obtained by a something which is carried by the blood stream. There was rapid disappearance of fluid and marked general improvement. In one case the circumference of the abdomen decreased 10 cm. in a very few days.—*Behandlung tuberkulösen Peritonitis mit der kunstlichen Höhensonne, Laquerer & Lasser-Ritscher, Med. Klin., 1918, 291.*

Theory of Light Treatment in Surgical Tuberculosis.—The combination of sunlight with hyperemia treatment should be the method of choice in treating bone tuberculosis. More than 100 cases of severe types, generally complicated with fistulae, were treated and they were healed in a surprisingly short time, returning to normal function. Both agents act by setting up a hyperemia.—*Zur Theorie der Lichtbehandlung chirurgischer Tuberkulosen, E. Kisch, Münch. med. Wchnschr., 1917, 614.*

A Clinical Method of Dosage of Ultraviolet Rays.—The unit of quantity is the quantity of ultraviolet ray which acting normally on a decinormal solution of silver nitrate of 1 cm. thickness can reduce 1 mgm. of silver per scm. Having got this unit, thick paper soaked in a 20 per cent solution of potassium ferrocyanide was used. On exposing this paper to ultraviolet rays, the color passes from the initial white to a deeper and deeper yellow, through all the stages of cream and sulphur shades. The changes of tint of the indicator under the influence of different doses of rays, reckoned in the unit of quantity, were then observed; and at the same time the different skin reactions to these different doses were noted. The indicator is termed the chromo-actinometer. This consists of 5 tints which are those taken by the reacting strip and correspond to the following doses: ½ unit, 2 units, 6 units, 12 units and 18 units of quantity. Then the skin effects of each of these doses, as measured by the indicator, are as follows:

½ unit—slight erythema
2 units—erythema followed by desquamation
6 units—photo-epidermatitis
12 units—intense photo-epidermatitis
18 units—photo-dermatitis

The author uses these reactions especially for treating skin affections, and with his method of dosage he has been able to study the quantity of rays emitted, varying with the intensity of the current of the lamp in a given time, and has also been able to show the age of the quartz light.—*A Clinical Method of the Dosage of Ultraviolet Rays, H. Bordier, Arch. Radiol. & Electrol., April, 1920, 366.*

Biological Action of the Ray.—Small doses of quartz light give good granulations while large doses destroy. Absorption of the ultraviolet ray occurs in the corneum layer while the biologic action occurs in the pigment layer. There is a latent period between the exposure to the ray and the inflammatory response, which period allows the toxin to diffuse. If a wet bandage is placed on the skin before the ultraviolet exposure, the action is weaker; but, if diathermia is first used, there is a more rapid carrying off of the so called toxins to the depths, and therefore the local reaction to the ultraviolet rays is less. Climate is of value because of irritation to the skin by sun and cold air. The author theorizes that the corneum layer, by means of a fluorescence developed under the action of the ultraviolet ray, can send out rays of longer wave length and that his so called beta rays are developed. The latter produce chemical changes at the place of their absorption. Small doses of sunlight give the best results by stimulation. Hesselbach showed that after the use of ultraviolet rays there were decreased number of breaths but deeper breathing to compensate. There were questionable changes in the red cells and the hemoglobin, but the polymorphonuclear cells were decreased. The author speaks of a spectrosol lamp which gives good results, developing a good pigment. It is weaker than sunlight but has a similar qualitative spectrum.—*Über biologische Strahlenwirkungen, T. Christen, Strahlentherapie, 1919, ix, 165.*

The Harm to the Eyes through Light.—People after working in snowy surroundings see everything as red on entering a dark place. This is due to the after-effect of the short visible rays of the spectrum influencing the retina. The ultraviolet rays may cause a scotoma for many weeks.

Light rays may cause a central dark spot on the retina by being concentrated on the fovea. The retina is rather safe from the ultraviolet rays because the latter do not penetrate, but the long waves may have an action on the retinal pigmented cells. The ultraviolet rays may cause cataracts as is seen among glass-blowers.—*Die Schädigung der Augen durch Licht und ihre Verhüllung, Birsch-Hirschfeld, Deutsch. med. Wchnschr., 1918, 882.*

Influence of the Sun on the Circulating Lymphocytes.—Blood counts were made on 38 individuals before going to Woods Hole, Mass., for their summer vacation, and on returning. Chronic sunlight dermatitis or pigmentation was accompanied in 25 of the 38 cases by an appreciable increase, both absolute and relative, in the number of circulating lymphocytes. Out of 13 with no increase, 6 failed to tan, 3 were so dark originally that it was impossible to determine an increase and 5 had a very high count from the first. It seems probable that the lymphocytosis observed in the majority of cases, which resembles the response of animals to small doses of X-ray, is due to the effects of the ultraviolet ray, although one cannot eliminate the effect of the infrared rays or heat waves.—*Effect of Exposure to the Sun on the Circulating Lymphocytes in Man, H. D. Taylor, J. Exper. Med., January, 1919, 41.*

The Tuberculosis Problem.—The pathologists claim that the majority of the population are at some time or other infected with the tubercle bacillus, but only a certain proportion develop an active and fatal disease. If that be so the primary question to be solved in the study of tuberculosis is what physiological and environmental factors are responsible for maintaining the individual's immunity, and what factors break down his resistance and help to develop the active disease. Almost all the machinery in the struggle against tuberculosis has been directed to the recognition of the disease and its appropriate treatment, and to the attempt to prevent infection and reinfection. But correct diagnosis and treatment of those who are ill are not sufficient. Tubercle is the index disease of social conditions and it can be dealt with successfully only when we begin to study and understand the causes of immunity in those who are infected but not diseased, and of vulnerability in those who succumb. Sanatorium treatment is of value, but it would be much better to try to provide such conditions of life and labor as would render the expensive sanatorium unnecessary. Not only would such conditions prevent a large amount of tuberculosis, but also many other evils associated with bad social environment.—*Some Aspects of the Tuberculosis Problem, T. D. Lister, Lancet, February 21, 1920, cxcviii, 425.*

Needed Changes in Antituberculosis Work.—The writer advocates a campaign against tuberculosis by (1) education through the newspapers teaching the public the various signs of early tuberculosis and by placards in public places, and (2) legislation, e.g., drastic laws against promiscuous expectoration, a place of detention for incorrigible consumptives, reporting of every case of tuberculosis, municipal control of milk supply, laws against quacks. All persons should be examined for tuberculosis every three years. Each state should have a tuberculosis department to provide for impecunious cases. Physicians should learn to make early diagnoses. Public opinion must be educated to this end.—*Needed Changes in Antituberculosis Work, H. F. Gammons, Dallas M. J., April, 1920, vii, 11.*

Reforms in Campaign against Tuberculosis.—The campaign against tuberculosis has two distinct phases: (1) curative measures dealing with the infectious agent; (2) preventive measures dealing with the sociological and economic conditions, which turn a comparatively benign parasitic invasion into a cause of sickness or death. Much of the present day schemes have to deal with the treatment of the sick; and whether the infectiousness of the tubercle bacillus is high or low, the effort in the direction of cure is practically wasted for purposes of prevention. Diagnosis is paramount, and although difficult at times, it frequently is not made because of a deficiency in medical education. Therefore, practitioners have to receive a better training in all matters concerning tuberculosis. As regards the institutional treatment of tuberculosis the following suggestions are offered: (1) To confine treatment in ordinary sanatoriums to the early cases. (2) To provide homes for advanced cases, but without compulsory segregation, since the patient as the source, and the tubercle bacillus as the specific cause, of the malady represent only one phase of the etiology and a relatively less important one at that. (3) To provide farm colonies for consumptives and convalescents. The alleviation of distress achieved thereby does but little for the eradication of the socio-economic causes which produce it. (4) To throw the cost of these various institutions upon the public fund. The tuberculosis officership is in need of reform. Part time position and adequate pay would meet this need, and would also

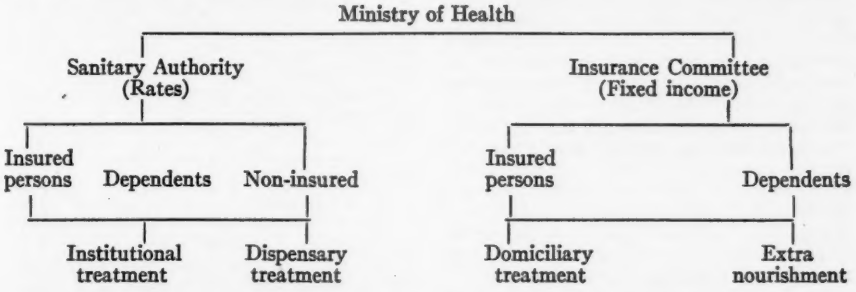
provide leisure and facilities for reading, thinking and teaching. Then again in-patient work as well as out-patient and administration work would tend to neutralize the cramping influences of this officership. Promotion to the chief tuberculosis office position shall be made from amongst the tuberculosis officers. Private practice should be permitted. The preventive measures are largely economic and political. Adequate housing and distribution of the population are foremost problems. Poverty, overcrowding, lack of fresh air and of sunshine have scientifically been determined to be the most important etiological factors in tuberculosis. A proper preventive measure is the open air school, which, however, ought to be instituted universally and not limited to a small portion of the tuberculous children. Education to counteract ignorance and superstition will be made possible only when the recipient is not overworked, not anxious, and not dulled by the monotony of his occupation. Industrial welfare should be more widespread. All the above measures implying an economic revolution can be brought about not through bureaucratic decrees, but rather through the awakening of the mass of the people to the vital issues of public health.—*Suggested Reforms in the Campaign against Tuberculosis. S. V. Pearson, J. State Med., May, 1920, xxviii, 144.*

Village Tuberculosis Settlements.—A deputation recently visited the British Minister of Health to urge the establishment of village settlements for tuberculous ex-soldiers as recommended in the Report of the Interdepartmental Committee on Tuberculosis. This report also recommended additional sanatorium accommodation and increased provision for training of tuberculous ex-soldiers. The reason presented for the establishment of such village communities was that sanatorium treatment, even where accompanied by training in suitable occupations, had been found to be inadequate as a means of combating tuberculosis, because patients who returned from the sanatorium to ordinary conditions of life and work were unable to maintain health and earn a living permanently. In the village settlement one could work under conditions that would enable him to maintain his health and have his family with him. The ex-soldier's earnings would be supplemented by his pension, but in the case of the civilian the earnings would have to be supplemented in some other way. The community however would gain in the result by the prevention of the spread of infection and by the fact that the patient would remain a productive worker. It was stated that out of thirty cases, that had come to the Cambridgeshire Tuberculosis Colony from sanatorium treatment and training, not one had died in four years. The Minister of Health assured the deputation of his good will and favorable attitude toward the village settlement plan.—*Village Tuberculosis Settlements, Editorial, Brit. M. J., April 3, 1920, 476.*

The Municipal Workshop for the Consumptive Ex-Soldier.—In the treatment of the tuberculous the need has been increasingly felt for some method of consolidating the benefits gained by sanatorium treatment and providing suitable employment for arrested cases before returning them to work under competitive conditions. A scheme has been devised for ex-soldiers in England suitable for any township, whereby municipal workshops are established providing first training in occupations suitable for arrested tuberculous cases, and later gainful employment at these occupations, in such localities where the men may set up a home. The work should consist of light manual employment in selected trades graded from fairly heavy work to the lightest possible. Carpentry and cabinet-making represent the first type, basket-making the second. The shops should be open for eight hours a day, but the time each man should work must be regulated by the medical officer. Each hour of work should be paid for at the union rate for that trade. The midday meal should be provided for at the shop, and provisions made for proper rest periods. A home-visiting schedule would also be a necessary part of the plan to provide aid and advice in maintaining proper home hygiene. Under this plan, many men will become able to work the full day, and in some cases men will be able to return to ordinary industry after one or two years in the workshop. In other cases the workshop period must be longer, and in others permanent. But any loss in this latter group will be compensated for by preventing infection in ordinary workshops and the consequent fresh incidence of tuberculosis. Soldiers, of course, in addition to their wages would receive pensions assessed according to their disability.—*The Municipal Workshop; a Scheme for the Post-Sanatorium Employment of the Consumptive Ex-Soldier, F. S. Turner, Lancet, February 21, 1920, 457.*

Schemes and Methods in Tuberculosis Work.—Gradual increase in the earning power and leisure of the general population, rehousing schemes, supervision of milk supply, voluntary notification of phthisis, etc., had done much to reduce the incidence of

tuberculosis even prior to the 1911 National Health Insurance Act. The latter provides, in addition to the above measures, "sanatorium benefit" for insured and dependent persons, and pending admission to the sanatorium, domiciliary and dispensary treatment with or without a grant for extra nourishment. The resources practically limited the operation of the act to the insured, being entirely inadequate for the dependents. Amalgamation of the Local Insurance Committee with the Local Sanitary Authority and the pooling of their funds provide for the distribution of the expenditure between the rates and the insurance fund. A diagram of the scheme is as follows:



Thus domiciliary and dispensary treatments are not available for the noninsured and the nondependents. This break in the campaign against tuberculosis should be filled by an authorization to expenditure for this purpose by the Health Ministry (Public Health Act, Oct., 1913). Suitable accommodations, suitable employment and financial help are the essence of the after care of any of the three types of treatment. Colony settlements run by Sanitary Authority, constant help and advice by means of visiting by the After Care Committee, financial assistance to the patient or his dependents to compensate the diminished earning power, would tend to increase the standard of living and hence the resistance of the consumptive. Segregation is an important function of the sanatorium. But the accommodation of well equipped institutions is wasted upon advanced cases. The special ward for advanced cases is not a solution, since the patient regards the admission thereto as equivalent to a death warrant and prefers to return home. Compulsory segregation would solve the problem, but is naturally objectionable. Some isolation scheme free from compulsion is desirable. The monotony of the sanatorium life makes it difficult to persuade the patient to remain there an adequate time. Without impairing the discipline the daily routine must be arranged with a provision for interest, amusement and recreation. Prevention of tuberculosis is more important by far than its cure. The chief effective measures operating in that direction are rehousing, milk supply supervision, and segregation.—*Schemes and Methods in Tuberculosis Work, B. T. J. Glover, J. State Med., May, 1920, xxviii, 140.*

Community Responsibility at the End of Sanatorium Treatment.—Most tuberculous patients when discharged from public sanatoriums are not cured, but merely improved, with arrested or quiescent lesions, and, if subjected to unfavorable conditions, are in danger of breaking down. The sanatorium is properly a great training school for the tuberculous where they are taught how to live, to secure and retain arrest of the disease. For the best results a social service follow-up system should be established by every sanatorium. A public health nurse or similar officer should visit the patient's home, and see that proper conditions are established for healthful living, and patients should be taught to visit the clinic on the slightest sign of any renewed activity of the disease, or routinely once or twice a year if there are no unfavorable symptoms. His work should be selected according to his physical condition, and it should be seen to that his working environment is sanitary and wholesome. Very few sanatoriums have any satisfactory follow-up system, but it is the duty of the community to render this further service to the patient, which will give the greatest possible returns on the money expended for sanatorium treatment.—*Does Community Responsibility End when Sanatorium Treatment has been Given? R. C. Kirkwood, Med. Rec., May 1, 1920, xcvii, 738.*

Tuberculosis in Albania.—A survey just completed by American Red Cross doctors in Albania shows that there are over 300,000

cases of tuberculosis in that country, 80 per cent of the entire population being affected. —*News of the Week, Med. Rec. June 19, 1920, xcvii, 1049.*

Tuberculosis and Economic Conditions of the Poorer Population in Trier.—House to house visits were made at the homes of 1017 of the poorer families of Trier by German speaking nurses of the U. S. Army Corps in 1919. There were 282 families with a history of tuberculosis, and 379 families where some member had tuberculosis. There were 343 cases of pulmonary tuberculosis, 249 cases of scrofula, and 43 cases of other forms of tuberculosis. The children were most frequently affected. The diagnosis of scrofula had often been made by the family physician, and probably more frequently than the symptoms warranted. The families visited included many who came to the German dispensary on account of sickness. The visits showed the frequency of tuberculosis, also the infected surroundings, and the kind of human material which would prove an easy prey to the tubercle bacillus. The investigation revealed very clearly that the poorer people had suffered great hardships on account of the war, and that disease, especially tuberculosis, had increased due to overwork, neglect of homes and children, largely on account of mothers working out, and especially due to the war rations with its consequent malnutrition.—*Economic Conditions of the Poorer Population of the City of Trier, E. H. Bruns, Mil. Surg., April, 1920, xvi, 418.*

Institutional Accommodations for Tuberculosis.—We recently received the following circular letter from the Surgeon General of the U. S. Public Health Service:

"At the present time, with thousands of cases of tuberculosis among discharged soldiers entitled to medical care and treatment at the hands of the Public Health Service, we find ourselves confronted by the fact that practically nowhere will general hospitals admit this class of patients; moreover there is almost everywhere throughout the United States a lamentable shortage of hospital facilities for those ill with tuberculosis. The opening of general hospitals to this class of patients would do very much more than provide relief for a large class of unfortunates; it would undoubtedly contribute enormously to the efforts now being made to control tuberculosis.

"As conditi ns are now, the interne serving his time in any of the general hospitals has practically no opportunity whatever to familiarize himself with the diagnosis and treatment of pulmonary tuberculosis. It is small wonder, therefore, that so large a proportion of the general practitioners fall so far short in their diagnosis of pulmonary tuberculosis. The present practice also fosters the erroneous belief in some miraculous virtue in climate in the treatment of tuberculosis, yet those familiar with the disease recognize that it is the proper use of fresh air which constitutes the valuable element in treatment at the various well-known sanatoria.

"In an effort to make better provision for the tuberculous among discharged soldiers, and at the same time to help bring about an improvement in our campaign against tuberculosis, Dr. Hugh S. Cumming, Surgeon General of the U. S. Public Health Service, has sent the following telegram to the American Medical Association, now in session in New Orleans, La.:

"I desire to urge more active participation by the general practitioner and by general hospitals in the treatment of tuberculosis. To insure earlier diagnosis, properly train internes and other personnel, popularize treatment in the home climate, provide additional facilities, I earnestly indorse the resolution passed by the National Tuberculosis Association in 1916, recommending that general hospitals should admit tuberculous patients and provide separate wards for that purpose. Sanatoriums and specialists in tuberculosis will always be needed and we should have more of them, but I believe that success in the antituberculosis campaign is largely dependent upon first, convenient facilities for observation and prompt treatment of patients with open tuberculosis, and second, in a sharpened perception and higher degree of skill by which the family doctor will make early diagnosis or even forestall the development of clinical tuberculosis in the adult before a definite diagnosis is possible. To provide adequate care for tuberculous exservice men and others, to protect infants from infection, enlist the aid of the general practitioner, allay phthisiophobia, and improve home treatment of tuberculosis, the opening of general hospitals to this most common of all serious diseases will materially assist."

While the conditions mentioned may prevail elsewhere in the country, for the past two years there have been constant vacancies in the institutions available to cases of tuberculosis in this city. Of the present available bed capacity of 4,200, there are vacancies to the number of 550. We have recently published several articles in regard to climate in the treatment of tuberculosis. —*Weekly Bull., Dept. of Health, N. Y. City, May 29, 1920, 170.*

$350,000 for Tuberculosis Hospital.—The Marion County Council authorized a county bond issue of $350,000 for new buildings at the county tuberculosis hospital, which was an increase of $50,000 over the amount asked by the board of managers.—*Indianap. M. J., May, 1920, xxii, 251.*

New Tuberculosis Hospital.—Plans are under way for the establishment of a tuberculosis hospital to cost $1,500,000 at Gabriels, N. Y., by the Knights of Columbus.—*News Items, N. York M. J., June 12, 1920, cxl, 1042.*

Tuberculosis Hospital for Public Health Service.—The tuberculosis sanatorium heretofore operated by the army authorities at Fort Bayard, New Mexico, has just been transferred to the U. S. Public Health Service and will soon be available for treating discharged, disabled soldiers. The Fort Bayard Sanatorium will provide the Public Health Service with 1,000 additional beds to care for its tuberculous patients. The present sanatorium at Deming will be held in reserve, specially for winter use. At the Fort Bayard Sanatorium the Public Health Service will treat only ambulatory cases of tuberculosis, in which the prognosis is favorable. Patients will be admitted only after careful observation elsewhere to make sure that their condition is suitable for successful treatment at a high altitude.—*News Items, New York M. J., June 12, 1920, cxl, 1043.*

State Regulation of Boarding Houses for Tuberculosis.—A bill introduced into the New York State legislature by Senator Julius Miller provides for the licensing of boarding houses for tuberculosis patients and for their supervision by the State and local health boards. Tuberculosis patients will be permitted to go only to country places where the climate is suitable, the houses maintained in sanitary condition consistent with the demands of the sufferers, the food adequate, and medical supervision for emergencies furnished by the State. Patients unable to pay will be aided by the State. Others will be required to pay one third of their expenses, one third will be paid by the county and the other third by the State.

Tuberculosis in Relation to Life Insurance.—Romanelli analyzes May's report on this subject, and compares the conclusions with his own experience, which suggests the advantage of postponing acceptance of a candidate who has recently had a tuberculous process in a bone or joint, in the urinary apparatus or peritoneum. In 75 per cent of his cases, when pulmonary tuberculosis developed later the interval was not over three years. With a clinically cured pulmonary lesion, he warns that there may still be fire under the ashes, and a trauma or infectious disease may fan it into a flame. This occurred in many cases during the influenza epidemic. A ten year interval, however, is a good guarantee, other things being equal, with a progressively decreasing extra risk premium.—*La tubercolosi in rapporto all'assicurazione vita, I. Romanelli, Policlin., January 5, 1920, xxvii, 9.*

Labor Tuberculosis Association Committee.—At a recent conference in New York of the New York Tuberculosis Association and the Labor Sanitary Conference, a joint committee was appointed consisting of five representatives in each organization. The work of the committee will consist in endeavoring to reach labor bodies and trade councils, particularly individual unions representing the greatest health hazard, distribution of literature, arrangement of talks and exhibits, encouragement of shop sanitation committees, health lectures, and in arranging, if possible, for confidential medical examination of employees or members of unions in the workshop or in coöperation with occupational or tuberculosis clinics. The members of the committee are: For the New York Tuberculosis Association: Dr. Louis I. Harris, chairman, Dr. George M. Price, Dr. Edward McSweeny, John Fitch and Paul Kennaday. For the Labor Sanitation Conference: Alfred Boulton, Miss Maud Swartz, Meyer Abramson, Frank Byrne and Frederick Gaa.—*Editor. Notes, N. York M. J., March 6, 1920, cxl, 429.*

Tuberculosis in Husband and Wife.—In an investigation which covered 1,000 successive dispensary cases, Minnig found that 502 of the patients were married and 498 were single. Among these 502, there was active tuberculosis in husband and wife in 44 cases, or 8.7 per cent. Of the 44 cases, 22 of the consorts had died of tuberculosis, or 50 per cent. Of the 22 surviving consorts, 17 were men and 5 were women. In these 22 tubercle bacilli were present in 12 of the widows or widowers. The period of illness extended from four months to twenty years. Minnig did not include in the 44 any cases in which, for instance, there was dulness with suppressed breath sounds or even bronchovesicular breathing at one or both apices and a vague history of pleurisy or other mild symptoms, but no moisture. No doubt many of these were tuberculosis carriers, yet not clinically open cases of

tuberculosis; but they were open cases part of the time.—*Incidence of Tuberculosis in Husband and Wife, A. Minnig, J. Am. M. Ass., May 22, 1920, lxxiv, 1445.*

Respiratory Disease Transmission by Inanimate Objects.—Cumming has suggested, in discussing the transmission of influenza and influenzal pneumonia, that the hands are important factors in the conveyance of germs to healthy persons, and furthermore that hand-to-mouth infection will account for the major part of this transmission. In these studies the methods of washing army mess-kits were particularly concerned, as the wash water served as a means for the contamination of the hands in the groups showing high influenza rates. In a later article, Cumming reports the results of a study of pneumonia in institutions, in some of which eating utensils were washed by hand and in others by machine washers. In the first group the pneumonia rate was much higher than in the second group. Still more recently the same investigator has laid primary emphasis on tableware, particularly spoons, forks and knives, as a means of transmitting tuberculosis. This point of view is confirmed by deaths of guinea pigs from tuberculosis in 25 per cent of instances after injections of sediment from water in which spoons used by tuberculous patients had been rinsed after washing. In accepting these findings, however, it should be remembered that in intelligent households silverware is usually both washed and rinsed before being used again. It would be interesting to know the influence of the combination of these operations on freeing spoons from tubercle bacilli. The work of Cumming focuses the attention of sanitarians on other means of conveying germs of respiratory diseases than by droplet infection directly from mouth to mouth. More data are needed to show that these means are really the major ones. It is probably true that the inanimate objects and hands are capable of conveying disease germs as well as are the infectious droplets, and it is possible that too little attention has been given to them.—*Editorial, J. Am. M. Ass., May 22, 1920, lxxiv, 1462.*

Pathologic Respiratory Conditions as Affecting Shape of Chest.—Wenckebach's article supplements one published in 1907 on the pathologic relations between the respiration and the circulation. He here discusses the six main factors influencing the form of respiration and shape of the thorax, e.g., (1) the bony thorax and the spinal column, (2) the influence of gravity on the shape of the thorax, (3) the abdomen as support of the thorax, (4) the elastic traction of the lung, (5) the forces of respiration and (6) importance is ascribed to extreme leanness as this allows the so called asthenia shape of the thorax to develop even without any constitutional anomaly or congenital predisposition. The muscles of the back play an important rôle in quiet, unconscious respiration as well as in forcible inspiration. Humming with the lips closed, as a breathing exercise and for study of the action of the abdominal muscles is highly commended. With this, the diaphragm is drawn up extremely high in the chest as the humming continues to the limit of expiration. Coughing is still more instructive for study of the muscles involved in respiration. The diaphragm like all other muscles is subject to reflex influences, and its excursions can be modified from distant points. When breathing quietly, with mouth closed, if the mouth is opened suddenly, the diaphragm rises a little. Continuing the even breathing with the mouth open, it is evident that conditions in the respiration are quite different from what they were before. The sinking of the root of the tongue when the mouth is opened may explain this difference in the tonus of the diaphragm. Whatever the explanation, there is no doubt that this modified behavior of the diaphragm is an element not to be overlooked in habitual mouth-breathing.—*Uber pathologische Atmungs- und Thoraxformen, F. Wenckebach, Wien. Arch. f. inn. Med., March 1, 1920, i, 1.*

Occupation and Tuberculosis.—Indoor workers are more prone to respiratory diseases because they are frequently crowded together, and their work requires faulty posture. The protection afforded by the nose and throat is gradually overcome and the dust reaches the lungs or is swallowed with the saliva. The character of the dust determines the amount of the resulting injury. When the chemical composition of the dust is similar to the natural constituents of the body, as in the case of lime workers, the damage is less. Only the finest particles of dust reach the lungs. There is a great discrepancy in the number of deaths in peoples of different trades who are exposed to the same kind of dust The metallic dusts are the most frequent cause of pulmonary fibrosis. The presence of dust alone does not account for the undue prevalence of tuberculosis in certain occupations. Everything which undermines the general health, such as alcohol or inherited weakness, are important contributory factors. Welfare legislation, factory sanitation, and per-

sonal hygiene have produced gratifying results.—*Occupation in Relation to Tuberculosis, G. M. Kober, Pub. Health Rep., March 26, 1920, xxxv, 751.*

Tuberculosis in Dogs and Cats.—Petit expatiates on the facility with which human tuberculosis is transmitted to dogs and cats, and the danger of infection from those with intestinal, pulmonary and open skin lesions. Any dog or cat should be regarded with suspicion when it is growing thin and coughs, or has a diarrhea or persisting ulceration on the face or neck. The pus from these latter lesions in particular swarms with tubercle bacilli.—*Les formes ouvertes de la tuberculose chez les carnivores domestiques, G. Petit, Bull. d. l'Acad. d. Méd., November 18, 1919, lxxxii, 310.*

Toll of Cattle Tuberculosis.—Tuberculosis was responsible for the condemnation of more cattle, slaughtered under Federal meat inspection last year, than all other diseases combined. Information fron the Bureau of Animal Industry, United States Department of Agriculture, shows that 59,547 carcasses of cattle were condemned on postmortem inspection, and of that number 37,600 were the result of tuberculosis. In addition 53,652 parts of cattle carcasses were condemned for the same cause.—*Matters of Current Interest, Am J. Vet. Med., June, 1920, xv, 45.*

Thermal Reaction Following Intracutaneous Injection of Tuberculin.—Investigations at the University of California Experiment Station have pointed out that the intradermal injection of tuberculin in suitable doses gives rise to a thermal reaction similar to the one obtained by the subcutaneous method. The intracutaneous dose used by the California state veterinarian in official testing, 0.2 cc. of 5 per cent solution of alcoholic precipitated tuberculin, is sufficient to bring forth this result. The practical application of these observations is evident. One may, by one injection, make use of two diagnostic manifestations of tuberculin application, namely, general reaction as indicated by rise in temperature and a local reaction. The San Francisco County Medical Milk Commission has recently adopted this method of testing for additions to herds producing certified milk. The subcutaneous test was formerly used. When only one observation can be made, we have made it at seventy-two hours, others prefer ninety-six hours. Some reactions do not occur until after the seventy-second hour, but we are not satisfied that there is not an equal or larger number of cattle in which definite positive reactions have been present but disappeared before the ninety-sixth hour. —*Am. J. Vet. Med., June, 1920, xv, 295.*

Percentage of Tuberculous Cattle Reduced.—Extensive tests recently made by State Veterinarian Swingley, in Yakima County, Washington, show a reduction in the number of cattle affected with tuberculosis, the percentage being 6 per cent, as against 7.51 per cent six months ago. Most of the herds in the Yakima Valley have been given clean bills of health. Of 2009 cattle tested, 121 reacted, were condemned and destroyed, the estimated value of the animals destroyed being $27,000, which includes forty-five pure-bred herds, some of the finest registered pure-bred cattle in the country. The value of the grade cattle is estimated at $125, the pure-breds at $250, not including the fancy, high-priced animals.—*Current Comment, Am. J. Vet. Med., May, 1920, xv, 38.*

Grippe and Pulmonary Tuberculosis.—Three cases of latent tuberculosis are reported which became active after an attack of influenza. Two of them developed a rapid downward course and succumbed. The third case withdrew from observation with signs of active tuberculosis.—*Grippe et tuberculose chronique, J. Lortat, Progr. Méd., February 28, 1920, lx, 91.*

Tuberculosis of the Conjunctiva.—An infant of 8 months developed an ulcer of the right eye during an attack of double pneumonia. Both lids were thickened; there was mucopurulent discharge. a necrotic ulcer on the upper tarsal conjunctiva, and numerous small nodules studding the conjunctiva. On the lower lid there were also nodules, some of which coalesced to form an ulcer. The preauricular, submaxillary and cervical lymph nodes on the right side were much enlarged. The von Pirquet test was negative. But an excised piece of the ulcer was found to be tuberculous, both the characteristic structure and bacilli being present. The child died. No autopsy.—*Tuberculosis of the Conjunctiva, D. H. Coover, Am. J. Ophth., March, 1920, iii, 206.*

Laryngeal Tuberculosis.—It is generally conceded that tuberculosis of the larynx is secondary to tuberculosis of the lungs. Although in a very small proportion of cases the laryngeal symptoms appear to occur primarily, physical examination and the X-ray reveal a primary involvement of the lung. The lymphatics and the blood vessels have been shown to be responsible for carrying the bacilli to the larynx. The first symptom of laryngeal trouble is hoarseness;

ater there is aphonia, painful deglutition, and dyspnea. The appearance at first may not be characteristic; the larynx may be reddened and the vocal cords congested. The following are pathognomonic pictures: a pale, grayish color with cords lax, flabby and possibly nodular; a very slight ulceration of the epiglottis or ventricular bands; miliary tubercle, under the mucous membrane; ulcerations of the aryepiglottic folds and club-shaped thickening of one or both arytenoids. In the terminal stages, there is destruction of the cartilage with abundant secretion. In some cases where laryngeal symptoms are suggestive, the diagnosis of tuberculosis must be established by a thorough examination of the lungs. In advanced cases gummatous ulcerations may be mistaken for tuberculosis, and a Wassermann should be made. Carcinoma must be excluded by a microscopical examination of an excised cauliflower excrescence. The prognosis is dependent on the pulmonary involvement; if the lung condition is amenable to treatment, improvement of the laryngeal symptoms follows. The same treatment benefits both. In laryngeal tuberculosis a life at high altitudes is especially beneficial; in no other condition does climatic influence play so important a rôle. In the later stages, distressing symptoms must be relieved as they arise.—*Tuberculosis of the Larynx, H. Kunz, Laryngoscope, March, 1920, xxx, 150.*

Phototherapy of Laryngeal Tuberculosis.—Blegvad describes his success in 52 cases of laryngeal tuberculosis treated by general exposures to the carbon arc light. Each case is reported in detail, with illustration of the findings before and after. The patient reclines, undressed, under the light from four powerful (20 amperes) arc lights, four patients at a time sharing the light bath. From fifteen minutes at first, the exposures are lengthened in a week to an hour and were never given longer than this. Among the 74 patients thus treated, the laryngeal tuberculosis healed completely in 17. In 16 the tuberculous process continued its course unaffected. Most of the patients had concomitant pulmonary tuberculosis, and some in an advanced stage. The ulcerative processes in the larynx promptly subsided under the phototherapy which was sometimes supplemented with local measures, especially the galvanocautery according to Grünwald's method. The course of treatment lasted from two to four, six or more months; some of the patients took two courses with several months' interval.—*Demonstration af Billeder af Larynxtuberkulose, N. R. Blegvad, Hospitalstid., March 3, 1920, lxiii, 129.*

Lupus of the Upper Air Passages.—The greater number of cases of lupus of the upper air passages occur in females and in the second and third decades of life. The primary focus in these cases is the nose. This was the case in 113, or 88 per cent, of 128 cases studied. The first symptom is a blocking of the corresponding nostril. Examination shows crusting on the affected area, usually the anterior end of the inferior turbinate; and when the crust is removed, a pinkish, granular surface is seen that bleeds easily. As the disease progresses there is considerable destruction of tissue. The disease may spread by direct extension, or by the lymphatics, to the tear sac, the alveolus, hard or soft palate, uvula, pharynx, and the larynx. In lesions of the palate and uvula, the mucous membrane is more granular than in the other regions affected. In the pharynx the posterior wall is usually affected, and the lesions appear as small nodules. Scarring is a distinct feature. In the larynx the lesions vary from simple redness to practically complete infiltration, which may continue to nodular infiltrations and eventually ulceration. Treatment may have an inhibitory effect, but few cases are cured. Among the agents employed are tuberculin, salvarsan, electrical ionization, curetting with or without application of lactic acid, electrocautery, Pfannenstiel's treatment, X-ray. The first three methods named have been abandoned. For lupus of the nose, Pfannenstiel's treatment is distinctly helpful (KI internally and H_2O_2 locally with the idea of having nascent iodine act on the foci). The X-rays are employed in selected instances. Two cases were treated also with the Finsen rays and both were benefited.—*Lupus of the Upper Air Passages: Report on 128 Cases, R. Webber, J. Laryngol. Rhinol. & Otol., January, 1920, xxxv, 7.*

Perihilar Bronchopneumonic Pseudolobar Phthisis.—In hilum tuberculosis the foci may be small, disseminated and nodular or larger and nodal, producing a characteristic dappled appearance on the radiogram. At times the nodal shadows become aggregated and then combined by intervening less dense opacities, consisting of condensed tissue often containing dilated and thickened tubes; in other shadows there are extensive tracts of pseudolobar homogeneous consolidations approaching in aspect those present in pneumonia and pneumonic phthisis. Perihilar disease may be secondary to apical lesions of a minor or latent character which for some reason have been reactivated; frequently both apices are normal. Occasionally there may be impaired breath sounds, granular or interrupted breathing at one

apex with some diminution of one supraclavicular isthmus. These are generally the persistent signs of a latent or arrested tuberculosis and not an indication of the activity. In the perihilar types, which show tracts of pseudolobar disease, symptoms such as cough, pyrexia, emaciation, and anorexia may become conspicuous before the diagnostic signs appear, or such radiographic shadows may be associated with quiet phases of the disease when the signs become minimal.

It is shown that perihilar fibrocaseous tuberculosis may be almost entirely unilateral. If bilateral the pulmonary lesions are not, as a rule, contemporaneous; one may be subacutely progressive, while the other is manifestly quiescent, even retrogressive. They arise in connection with hilar or perihilar glands on the same side. At times the disease may arise from apical lesions. During its subsequent evolution, cavities may form in the perihilum, and a second group of aerial foci may proceed from them which may be partial—affecting the diseased side only—or it may be general.

The disease advances in the upper lobe towards the axilla; in the lower lobe towards the costophrenic sulcus, finally, in each case, producing a cuneate tract of infiltration with its apex situated at the hilum. In the left upper lobe the opacity may be fanshaped. As the lesion advances centrifugally it becomes more superficial, until in certain areas the characteristic tuberculous râle becomes audible. In the earlier stages, posttussive inspiratory crepitations may be audible. Mistakes may be made by the clinician, who thinks only of the apical crepitations and does not auscultate the fissures, the axilla, and the base. Pleuritic pains in the axillary regions and right basal effusion are not infrequent. The latter are more likely to occur when the middle and lower lobes are invaded. Basal effusions may be encountered in middle age. They may be accompanied by serious cardiac embarrassment and alarming dyspnea.

Perihilar bronchopneumonic infiltration, when bilateral, may occupy the wings of the chest, or it may approach the apex in one and the base in the other lung; there may be a protrusion of the middle intermammary region. This disfigurement is called annular emphysema. There is a greater tendency in this type to fibrosis and chronicity than in the purely apical variety. The prognosis is more serious in the cavitary forms and *cæteris paribris*, the younger the age of the patient; when the foci are small and disconnected, the prospect is brighter than when continuous tracts of infiltration are visible on the radiogram. In the strictly unilateral forms the outlook is also more favorable. This essentially chronic type appears to be more closely connected with the flat chest, whether congenital or acquired, which, when it becomes emphysematous still remains practically flat, bulging, if at all, merely in the lower middle and basal parts of the lung. —*Perihilar Bronchopneumonic Pseudolobar Phthisis, W. Overend, Arch. Radiol. & Electrother., January, 1920.*

Tuberculosis of the Breast.—The syndrome affects only one breast and is more common in females, especially in mature patients who have nursed children. About one-half of the cases are probably retrograde infections from the axillary glands, which are always involved either primarily or secondarily. Others may be hematogenic or from contiguous structures. Often the primary focus is undiscoverable. In the case reported there was no family history nor any primary lesion antedating the breast process. Five years previously the patient noticed a small breast nodule, firm and painless. This grew larger, others appeared and later there was a discharge of thick material, accompanied by intermittent fever. The woman was slightly emaciated, with a sallow skin, a temperature of 102 and a pulse of 120. The breast was shrunken and discharged thin pus from several sinuses near the nipple. The axillary lymph nodes were enlarged. The blood showed a moderate secondary anaemia. The general examination was otherwise negative. The entire breast was removed with the overlying skin and the axillary lymph nodes. The specimen showed confluent tuberculosis.—*Tuberculosis of the Breast—Report of Case, C. Rosser, Dallas M. J., April, 1920, 16.*

Tuberculous Enterocolitis.—The pathology of tuberculosis of the intestine is divided into three types: (1) nodular, (2) ulcerative, and (3) fibrous. A lesion roentgenologically demonstrated in the ileocecal coil, with irregularity of bowel contour and without the physiologic barium shadow in the cecocolon, although it may represent any ulcerative process, is probably tuberculous if pulmonary tuberculosis is present. The various types are usually associated to a greater or less extent, dependent on the stage of the disease. The nodular type is recognized by means of the roentgen ray only if it encroaches on the lumen of the bowel, and the ulcerative and fibrous types by irregularity of contour, and in the terminal stages by obstruction. The presence of spasm must not be overlooked, since it often causes irregularity of contour and is diagnostic even when the lesion itself is not demonstrable. The opaque enema generally is preferable to

the ingested meal in demonstrating the filling defect and spastic phenomena which are roentgenologic signs of tuberculous colitis. A gap in the physiologic barium shadow of the cecocolon in the more advanced cases is demonstrated by the ingested meal, but unquestionably the disease will be demonstrated earlier by the enema.—*Roentgenology of Tuberculous Enterocolitis, R. D. Carman, J. Am. M. Ass., May 15, 1920, lxxiv, 1371.*

Tuberculosis of the Mesenteric Glands.—Primary tuberculosis of the mesenteric glands is not so well known as the secondary form, in spite of its greater importance. The diagnosis of the primary form is important because it is so often confused with surgical diseases, especially appendicitis. The disease is produced by tubercle bacilli entering from the intestine. The bovine type of bacillus is common. The favorite site of the disease is the lymph glands of the ileocecal region. Children are more frequently affected than adults, which is owing to the greater permeability of the intestinal mucosa. Abdominal pains, usually localized in the ileocecal region, are the most important initial symptom. Acute symptoms often resemble those of tuberculosis of the peritoneum. Fever is usually present at the onset. Insatiable hunger (bulimia) and denutrition, accompanied by secondary anemia, are characteristic symptoms. The intestinal disturbances vary and are not typical. Blood in the stool points rather to tuberculosis of the intestine. Two roentgenograms of the abdomen should be taken several days apart for purposes of comparison. The most important clinical complication is ileus. The lack of abdominal distention and the abdominal sensitiveness to pressure help to differentiate the disease from appendicitis, which it resembles in its earlier manifestations. Tuberculosis of the mesenteric glands is more amenable to treatment than any other form of tuberculosis: forced feeding, change of climate, artificial heliotherapy, deep abdominal roentgenotherapy, and tuberculin injections. Surgical intervention is indicated only when long continued internal treatment has failed. Mesenteric abscesses may demand an operation. Various types of operation are to be considered: radical extirpation of the diseased glands, excochleation, abscess puncture and explorative laparotomy in diffuse conditions in which assailable glands are not readily recognized.—*Die Mesenterialdrüsen Tuberkulose, E. Gehrels, Deutsche med. Wchnschr., October 9, 1919, xlv, 1128.*

Tuberculosis of the Appendix.—Tuberculous appendicitis is a definite entity which, though rare, should be considered in both diagnosis and prognosis and surely justifies routine sectioning and careful examination of all appendices removed at operation. Demonstration of the lesion may save many lives either by removal of the primary focus or by making a diagnosis so early that immediate treatment may bring about arrest or cure of the general conditions.

Conclusions: (1) The disease may be primary or secondary. (2) Infection occurs directly from the intestinal contents or by the hematogenous or lymphatic route. (3) It may produce either the ulcerative, hyperplastic, or miliary type. (4) It can frequently be diagnosed only by microscopic examination. (5) The symptoms resemble very closely those of suppurative appendicitis.—*Tuberculosis of the Appendix, Margaret Warwick, Ann. Surg., February, 1920, lxxi, 139.*

Tuberculosis of the Urinary System.—Renal tuberculosis is insidious in its onset and is secondary to a focus elsewhere. The infection is hematogenous in its origin, is carried upward by means of the lymphatics, downward by the urine. The ureter and bladder become diseased by a descending infection. Tubercle bacilli should be found in the urine. The presence and function of the second kidney must be determined. The treatment consists of nephrectomy followed by injections of tuberculin, together with general antituberculosis treatment. Healing of a tuberculous lesion in a kidney is very doubtful; the disease almost invariably progresses till the whole organ has been destroyed.—*Tuberculosis of the Urinary System, J. E. Palmer, Can. M. Ass. J., March, 1920, x, 225.*

Prophylaxis of Renal Tuberculosis.—Renal tuberculosis is widely prevalent and almost always escapes detection, at least during the period when a nephrectomy offers the greatest chance of success. It is an essentially chronic disease, and may develop insidiously with periods of remission. One patient was inoperable from bilateral pyonephrosis when first seen, but is still under observation ten years later. The first, the albuminuric phase, is followed by the pyuric phase, with or without slight symptoms from the bladder. The involvement of the bladder forms the third phase. Usually it is only after the practitioner has wasted some time trying to cure the "cystitis," that he thinks of the kidney and calls in a surgeon, just before the fatal progression into the fourth, the terminal stage. Renal tuberculosis is of blood-borne origin. Every young person with albumin and pus or blood in the urine (not explainable by gonorrhea or other infectious disease or adnexitis), should be suspected of renal tuberculosis even although the general condition is good. Note

the transparency of the urine, the tender points for the kidney, palpating for them with the hands superposed, working from above downward and from within outward along the line from the umbilicus to the thigh, following the pulsation of the iliac artery down to the passage of the ureter into the superior strait of the pelvis. An absolute diagnosis is possible only with discovery of the tubercle bacillus, and, with this, the surgeon should be called in at once. Krönlein found a tuberculous process in the kidney in 29.8 per cent of the cadavers examined, and all authors agree that renal tuberculosis is unilateral in the first stages in 88 per cent of the cases at least. By the time severe cystitis has developed, both kidneys are usually involved.—*Di alcuni rilievi clinici per la lotta contra la tubercolosi renale, D. Taddei, Rif. Med., November 29, 1919, xxxv, 1056.*

Massive Degeneration in Tuberculosis of the Kidney and Clinical Cure.—In kidney tuberculosis the lesions may be of such minor intensity and virulence that they heal without ever becoming clinically manifest. At the other extreme are those rare cases which pass on to complete destruction, isolation and so called self-enucleation. This is compatible with our knowledge of tuberculosis as it affects other organs of the body. Closed tuberculosis of the kidney may result either from obliteration of the ureter preventing the kidney from emptying its pathological products into the lower urinary tract, or from the destruction of the kidney secretory tissue, perhaps combined with an obliterating ureteral lesion. The latter group is the so called silent kidney, representing an autonephrectomy. Two cases are reported in this group. In one case the patient died of pernicious anemia, without any symptoms referable to the renal lesion. Autopsy showed the secretory tissue of the kidney to be entirely destroyed and replaced by a mass of caseous material. No tubercle bacilli and no tubercle formations were present, so that the lesion may be regarded as entirely inactive and healed. In the other case, the kidney was obtained by nephrectomy: although the secretory tissue was destroyed, and clinical symptoms had abated, the kidney represented one stage through which the case must have passed and the condition was not entirely healed.—*Massive Degeneration in Tuberculosis of the Kidney and its Rôle in the Clinical Cure, A. Randall, J. Urol., December, 1919, iii, 427.*

Monobloc's Operative Treatment of Tuberculous Lymphangitis.—Although the treatment of tuberculous lymphangitis by the excision of the primary focus, the affected vessels and the glands of which they are afferents, is recognized as perhaps the only effective treatment for tuberculous lymphangitis of the limbs, Handley doubts whether the importance of excising all the affected tissues in one piece has been properly emphasized. Obviously, if the removal is carried out in sections, the chances of a reinfection of the wound are greatly increased. He cites a case of tuberculous lymphangitis following injury to a tuberculous wart of long standing in which the result was not perfect, and the policy of attacking the recurrences, which sometimes gives such satisfactory results in carcinoma was followed with a considerable degree of success. From the microscopic examination of many specimens, Handley is convinced that lupus vulgaris is essentially and primarily itself a lymphangitis of the cutaneous and subcutaneous lymphatics, and that it differs from "tuberculous lymphangitis" only in its slow and limited spread through the lymphatics. The principal reasons for this belief are: The plane primarily affected, namely, the superficial layer of the dermis, is the plane of origin of the lymphatic vessels of the skin. Changes in the lymphatic vessels of origin can be seen beyond the clinical edge of the area of lupus. Moreover, isolated giant cell systems can often be found in the subcutaneous tissue, showing that this layer also is affected as well as the skin, and these isolated giant cell systems are usually found close to the blood vessels, in the situation of the comitant lymphatics.—*Monobloc's Operative Treatment of Tuberculous Lymphangitis, W. J. Handley, Brit. J. Surg., January, 1920, vii, 324.*

Tuberculous Rheumatism.—While the existence of tuberculous rheumatism is quite generally recognized, there are many erroneous ideas afloat in regard to the nature of the disease and with respect to its treatment. Many seem to think of tuberculous rheumatism as an articular localization of the Koch bacillus which is not only still unproved but seems to be in contradiction with almost all the facts. It should therefore be emphasized that tuberculous rheumatism (or inflammatory tuberculosis) presents just ordinary lesions, and that there are no evidences of classic tuberculosis. Tuberculous rheumatism is not so much a toxic rheumatism as an antitoxic or reactional rheumatism. It seldom appears when the toxic substances are abundant. The tuberculous rheumatic is one who has recovered from tuberculosis, whose organism is defending itself, and in whom the antibodies are very active and very abundant. Since tuberculous rheumatism is not a local tuberculosis but a rheumatism, it should be treated like other forms of

rheumatism: warmth, immobilization during the acute stages but mobilization and massage as early as possible to avoid atrophy and ankylosis.—*Rhumatisme tuberculeux, L. Duvernay, Lyons Méd., April 10, 1920, cxxix, 298.*

Uncinariasis and Manifest Tuberculosis.—In forty-six cases of suspected tuberculosis, Adams failed to find any evidence justifying the diagnosis of tuberculosis but established the presence of existing infection with hookworm in thirty-two cases, and developed clear histories of previous infections of considerable severity in the remaining fourteen cases. The provisional diagnosis had been made in each instance chiefly because of the presence of adventitious sounds over the upper chest. Investigation disclosed the entire absence of râles and demonstrated the presence of joint sounds ranging from coarse grating to fine crepitations, the latter distinguished only with difficulty from true râles. The majority of these sounds are to be heard over the sternocostal articulations and are transmitted out to the ribs, especially in the vicinity of the clavicle. A comparative study, on one hand, of 100 individuals with clinical evidence of uncinariasis, and of 100 normal subjects, on the other, showed a preponderance of confusing crepitations of about three to one in favor of the former. In old cases of hookworm infection the adventitious joint sounds are not confined to the shoulder girdle and adjacent parts, but are to be heard over several or many of the articulations. In Adams's opinion there is no evidence establishing any specific relationship between the two diseases, and, inasmuch as it has been demonstrated that the mortality from tuberculosis may be reduced by a measure so simple as elimination of hookworm where double infection exists, the obligation of the physician with regard to diagnosis and treatment is apparent.—*Uncinariasis and Manifest Tuberculosis, R. D. Adams, South. M. J., February, 1920, xii, 105.*

Tuberculous Lesions in Temporal Bone.—Bellin and his co-workers have encountered four types of tuberculous osteitis in the temporal region and ear, and cite a fifth type described by Bernard. They give an illustrated description of a case in each type: (1) latent tuberculous mastoiditis, often revealed by deafness; (2) tuberculous mastoiditis with necrosis, sometimes revealed by facial paralysis; (3) the same with fistulas; (4) chronic osteitis of the middle ear with hyperostosis of the mastoid; and (5) osteitis of the auditory meatus of of the scala tympani. The cases reported terminated fatally, the mastoid lesion being usually accompanied with tuberculous lesions elsewhere. The only exception is a case in which the outcome is not known although the immediate results of a radical operation were good. The lesion seemed to be limited to the external meatus and scala tympani, except where the condyle of the lower jaw had been touched by the osteitis. As a general rule, reliance must be on general measures until we can learn to detect these processes in their incipiency and remove the focus before there is extensive destruction.—*Ostéite tuberculeuse du temporal et des cavités annexes de l'oreille, Bellin, Aloin & Vernet, J. de Chirurg., December, 1919, xv, 486.*

High Frequency Treatment in Tuberculous Osteitis.—Four cases of tuberculous osteitis had been recorded some years ago, as having recovered under high frequency treatment. Three cases have remained well after intervals of eight, seven and six years respectively, while one showed recurrence three years after apparent cure. Since 1912 the author has used the method in about twenty cases of various types. The voltage employed always exceeded 80,000, and the frequency of current oscillations varied from 800,000 to one million a second. Ten minute treatments were given daily or three times a week. Results in tuberculous osteitis of the foot were particularly encouraging. Great variation in the duration of treatment required was noted, however, some patients recovering in a few weeks, and one in eighteen months. The high frequency treatment acts only with difficulty on deep seated tissues, and in general the deeper the lesions, the slower the effects. Yet the treatment failed in one case of tuberculosis of the wrist and in a case of spina ventosa. Hence success in the treatment would appear not to depend solely upon the depth of the diseased tissue, but also upon some other factor—possibly the habitual temperature of the parts, the hand, for example, being continuously exposed to a low temperature and thus lending itself less well than other parts to defense of the tissues against infection and to the processes of tissue repair. On the whole, however, the results from the treatment were sufficient to warrant its general employment.—*Traitement des ostéites tuberculeuses par les courants de haute fréquence et de haute tension, M. Doumer, Bull. d. l'Acad. d. Méd., January 27, 1920, lxxxiii, 93.*